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**Examining the disconnect between learning theories and educational practices in the PharmD programme at Qatar University : a case study**

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**Examining the disconnect between learning theories and  
educational practices in the PharmD programme at Qatar  
University: A case study**

Banan AbdulRzaq S Mukhalalati

A thesis submitted for the degree of Doctor of Philosophy

University of Bath

Department of Pharmacy and Pharmacology

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## شكر و امتنان

الحمد لله الذي بنعمته تتم الصالحات، و أفضل الصلاة و أتم التسليم على نبيه الأمين المصطفى. أشكره تعالى على فضله، و ما وهبني من نعمة طلب العلم، و تسخير له لخدمة الإنسان و عمارة الكون. قال تعالى: “يرفع الله الذين آمنوا منكم و الذين أوتوا العلم درجات”، و قال جل جلاله: “قل هل يستوي الذين يعلمون و الذين لا يعلمون”

أود أن أشكر جامعة قطر على منحة الدكتوراة التي مكنتني من إجراء هذا البحث، و أدعو الله أن يوفقني لخدمتها و المشاركة في تطويرها.

خلال السنوات الماضية تلقيت دعماً و تشجيعاً منقطع النظير من عدة أشخاص، و أود في هذه العجالة أن أتقدم بالشكر والامتنان لهم.

في البداية، أتقدم بالشكر للمشرفتين على رسالتي في جامعة باث الموقرتين: دكتورة اندريا تايلور و البروفيسورة مارجري ويس. أشكر لهن دعمهن، وتفهمهن، واهتمامهن منذ بداية هذا البحث و كونه مجرد فكرة، و حتى نضجه الى ما هو عليه اليوم. إن هذا لم يكن ليحدث لولا إخلاصهن و مساندتهن.

من جهة أخرى، و من جامعة قطر، أود أن أشكر أولاً المشرف الداخلي على بحثي: البروفيسور مايكل رومانوسكي، من كلية التربية، لما أبداه من مداخلات مميزة، و إرشاد قيّم، و جهد مخلص، ساهم في ترتيب أفكاري بالاتجاه الصحيح. كما أود أن أشكر البروفيسور حسام حمدي من كلية الطب للمناقشات الهادفة و البناءة حول موضوع البحث. و أيضاً جميع زملاء في كلية الصيدلة.

أود أن أشكر أيضاً صديقتي المخلصتين: منيرة و نوف اللتين كانتا معي لحظة بلحظة عبر الهاتف. كانتا شريكتين لي في لحظات الحزن و السعادة، مشجعتين و ناصحتين عندما كنت في أمس الحاجة لذلك. أحمد الله أن بعد المسافة لم يؤثر على عمق الرابطة بيننا.

إن وجود موجتهي الغالية في حياتي، جعل هذه الرحلة الشاقة ممتعة و مفيدة. لا شك أن اهتمامها اللامتناهي، تعاطفها الكامل و الصادق، و إرشاداتها لي في أمور حياتي، جعلتني أتسلح بالإصرار والعزيمة لإنهاء هذا البحث. و لذا فإنني أفق عاجزة عن شكرها على وضعي للتأمل مع لحظات ”بنان”، و مساعدتي لأحلم دائماً بتحقيق ما أنا عليه اليوم، و للاستمرار في السعي لأصبح من أتمنى أن أكون.

كلمات الشكر و الحب لا تسعفني عندما يأتي الحديث عن دور والدي الحبيبين. بداية، والدي رحمه الله، الذي فقدته مؤخراً و الذي كان رحيله جرحاً لم يلتئم بعد. كان والدي الحبيب مؤمناً بقدراتي، و لطالما شجعني أن أكمل دراستي حتى فارق الحياة. كان حلمه دائماً أن أحصل على شهادة الدكتوراة، و هذا الحلم كان دافعي للأمام في الأوقات العصيبة خلال بحثي.

أما والدتي العظيمة، بتربيتها الصالحة، وحنانها، ودعائها، ونصائحها الحكيمة، و تفهمها لكوني لست دائماً تلك الابنة التي أود أن أكون، فقد كان لها أكبر الأثر في إكمالي لهذه الرحلة الشاقة و لكن، في نفس الوقت، الممتعة و المميزة.

في الختام أتقدم بالشكر إلى عائلتي المحبة و التي عاشت معي هذه التجربة تماماً كما عشتها أنا.

كان وقوف زوجي مازن إلى جانبي في كل خطوة في طريق الدكتوراة الطويل، و تشجيعه لي ، دافعاً لاستمرارى في مسار التحدي. لقد كان إخلاص زوجي الحبيب واهتمامه بعمله و نجاحه فيه مثلاً حياً لي، يدفعني للمواصلة و التقدم، لأسير على نفس خطى النجاح.

أما أولادي، معاذ و هناء و لجين ، فقد أبدوا حباً و صبراً و اهتماماً منقطعي النظير، تعودوا من خلاله على إدارة شؤونهم بأنفسهم في غيابي عن المنزل، والسعي لتخفيف عناء بعدي من خلال التواصل معي على مدار الساعة خلال إقامتي في مدينة باث. شاركني أولادي الأحبة العناء في كل مرحلة، وأيضاً الاحتفال عند إكمال كل خطوة، انتقلاً من جمع البيانات، إلى تحليلها، ثم إلى كتابة البحث. و في الحقيقة لم أكن لأبدأ هذه الرحلة العلمية الصعبة والطويلة، و بالتأكيد لم أكن لأختتمها لولا دعمهم و حبهم، ولذا فأنتني أهدي هذه الرسالة البحثية لهم.



## **Abstract**

This research aims to examine evidence concerning the implementation of learning theories in the QU PharmD programme, utilising a case study research approach. The research is divided into four stages, conducted under the umbrella of a social constructivist interpretative framework and the constructivist and social theories of learning.

In the first stage, the perceptions of full-time students, faculty and preceptors in the QU PharmD programme were explored; these raised questions regarding the role of learning theory in the design and delivery of the programme. The second stage explored the extent to which the programme is based on learning theories by interviewing two programme designers, a pharmacy education scholar and an accreditation agency administrator. This stage proposed a disconnect between learning theories and educational practice in the QU PharmD programme, and suggested the need for investigating the implications of the proposed disconnect from a Communities of Practice (CoP) theory perspective.

In the third stage, a novel CoP theory-informed framework was developed through an extensive review of the literature.

In the fourth stage, the CoP framework was used as a theoretical instrument to analyse the evidence of CoP theory in the QU PharmD programme by conducting three focus groups and five interviews with key stakeholders, and by performing document analysis.

The research suggests that the disconnect between CoP learning theory and the educational practices in the QU PharmD programme is at the “implicit disconnect” level, meaning that some elements of the CoP framework were implicitly evident. This implicit disconnect contributes to the challenges found in the programme.

This study concludes with the creation of a case study-developed theory emphasising the importance of the full and explicit implementation of learning theory in educational practices. The theory calls for better integration of academic, practice, accreditation, and governmental sector efforts in professional healthcare educational reform initiatives.

Keywords: Practical placements; Preceptors; Faculty liaisons; CoP; Learning theories, Case study methodology; Constructivism; Pharmacy postgraduate education; Qualitative methods

## Abbreviations and Keywords

### Abbreviations

Table I. Abbreviations

Abbreviation	Definition
Academic Programme Review	APR
Accreditation Council for Pharmacy Education	ACPE
Advanced and Consultant Level Framework	ACLF
Advanced Pharmacy Research, Evaluation and Presentation	APREP
Advanced Professional Practice Internship	APPI
Association of Faculties of Pharmacy of Canada	AFPC
Bachelor of Sciences	BSc
Canadian Council for Accreditation of Pharmacy Programmes	CCAPP
CCAPP accreditation standards- addendum for the post-BSc PharmD programmes- document	CCAPP-old-D
Clinician educators	CEs
College of Pharmacy	CPH
College of Pharmacy proposal document	Proposal-D
Committee on Institutional Cooperation - pharmacy assessment collaborative	CIC-PAC
Communities of Practice	CoP
Consolidated criteria for reporting qualitative research	COREQ
Continuing professional development	CPD
Continuing Professional Pharmacy Development	CPPD
Continuous quality improvement	CQI
Doctor of Pharmacy	PharmD
Doctor of Philosophy	PhD
Educational Outcomes for First Professional Degree Programmes in Pharmacy document	Outcomes-D
Enquiry-based learning	EBL
Entry to practice competencies for Qatar document	Competencies-D
Ethical Implications of Research Activity form	EIRA
Ethical Review Board	ERB
Focus group/s	FG/s
General Level Framework	GLF
General Pharmaceutical Council	GPhC
Gulf Coast Corporation	GCC
Hamad Medical Corporation	HMC
Institutional Review Board	IRB
International Association For Medical Education	AMEE
International Pharmaceutical Federation	FIP
Inter-professional Education	IPE

Leaders in Indigenous Medical Education	LIME
Master of Sciences	MSc
Ministry of Public Health	MOPH
National Association of Pharmacy Regulatory Authorities	NAPRA
National Health Strategy	NHS
Network of CoP	NCoP
Objective Structured Clinical Examinations	OSCE
Oral Comprehensive Examination	OCE
Outcome-Based Education	OBE
Participant Information Leaflet	PIL
Problem-based learning	PBL
Professionalism Assessment Tool	PAT
Programme Learning Outcomes and Assessment Committee	PLOAC
Qatar University	QU
Quality Assurance	QA
Quality Assurance Agency	QAA
Self-assessment of the PharmD programme by the PharmD programme document	Self-study-D
Structured Practical Experience in Pharmacy	SPEP
Supreme Council of Health	SCH
Team-Based Learning	TBL
The CCAPP new accreditation standards document for entry to practise PharmD programmes document	CCAPP-new-D
United National Educational, Scientific and Cultural Organisation	UNESCO
World Health Organisation	WHO
Zone of Proximal Development	ZPD

## Key terms

Advanced Professional Practice Internship (APPI) courses, also called clinical internships, rotations or practical placements, are experiential training courses coordinated by practice-based adjunct clinical faculty members (preceptors) at hospital, or ambulatory care unit, or community practice sites.

Clinical preceptors, preceptors or mentors are adjunct faculty members who are responsible for student learning in their practical placements in the practice sites.

Faculty liaisons are full-time campus-based members cross-appointed by the academic faculty at CPH and by the practice sites in the hospitals, such as the HMC.

# **1. Chapter One: Introduction.**

## **1.1. Introduction**

This chapter presents background information about pharmacy education in Qatar. It starts with an introductory section about Qatar University (QU) and the College of Pharmacy (CPH). This is followed by a description of the full time Doctor of Pharmacy (PharmD) programme, which is the focus of this doctoral research. A summary of the research problem and research questions is provided. The chapter concludes by outlining the general structure of this thesis and describing the content of the individual chapters.

## **1.2. Introduction to QU**

In 1973, the Emir of Qatar established the College of Education in QU as part of his vision to make education a priority in the development of the State of Qatar. From 1977 onwards, other colleges were gradually established to meet the needs of the population (RAND Corporation, 2009). The pharmacy programme was established in 2006 and became the College of Pharmacy (CPH) in 2008. Today, QU comprises nine colleges: Arts and Sciences; Business and Economics; Education; Engineering; Health Sciences; Law; Medicine; Pharmacy; and Sharia and Islamic studies. These colleges offer 31 Bachelor, 26 Master, 4 Diploma, and 6 Doctoral programmes (Qatar University, 2016). All undergraduate programmes are gender segregated.

In 2003, QU began a reform plan with the assistance of the RAND-Qatar Policy Institute (Rand Corporation, 2009). The objective was to reform QU's administrative, operational, and academic structures, policies and practices. The reform was guided by the ideas of autonomy; decentralisation in decision-making; enhancements in the performance of academic faculty; improvements in student

learning and achievement; and the provision of a supporting role for community principles (Rand Corporation, 2009). In line with this reform, the first comprehensive university-wide strategic plan (2010-2013) was published in 2009, and was subsequently updated by the 2013-2016 and 2016-2019 strategic plans. These strategic plans focus on providing quality education, enhancing research, and strengthening community services, as well as pursuing international accreditation for colleges and programmes (Qatar University, 2015).

### **1.3. The College of Pharmacy at QU**

The establishment of the QU CPH aimed to meet Qatar's growing demand for improved health outcomes for its citizens. The Qatari government determined that there was a need for a national CPH to comply with the first pillar of human development in the Qatar National Vision 2030, which refers to: "...effective and affordable services, a skilled national workforce capable of providing high quality health services..." and "...high quality research directed at improving the effectiveness and quality of healthcare, and a continued commitment by the state to provide sufficient funds for maintaining the health of Qatar's population..." (Qatar General Secretariat for Development, 2008, p.9). The establishment of the college was seen as a way to meet this demand by enhancing health education and research, and through the graduation of qualified healthcare professionals

Founded in 2006, the CPH offers "an entry to practice" Bachelor of Sciences (BSc) degree programme (female students only), and three post-baccalaureate degree (graduate) programmes. The graduate programmes are the Doctor of Pharmacy programme (PharmD), the Master of Sciences (MSc) degree in Pharmaceutical Sciences and the Master of Sciences (MSc) degree in Clinical Pharmacy Practice. The CPH has plans to introduce a Doctor of Philosophy (PhD) programme in the 2017-2018 academic year.

With the establishment of the CPH, a decision was made to adopt the Canadian model for the college's programmes because local educational outcomes and competency expectations were lacking, as will be discussed in Section 6.4.1.1. The 2010 Association of Faculties of Pharmacy of Canada educational outcomes (AFPC, 2010a), and the 2007 National Association of Pharmacy Regulatory Authorities (NAPRA) professional competencies for Canadian pharmacists at entry to practice (NAPRA, 2007), were formally adopted by the CPH (Wilbur, Khalifa and Jewesson, 2010). The 2010 educational and student learning outcomes of first professional degree programmes in pharmacy (entry-to-practice pharmacy programmes) in Canada are: care provider; communicator; collaborator; manager; advocate; scholar; and professional (AFPC, 2010a).

## **1.4. The PharmD programme at Qatar University**

### **1.4.1. History and background information**

Qatar, as with other Gulf Coast Corporation (GCC) countries, has undergone a remarkable escalation in economic status, with increased tailored funds for improving healthcare services. Thousands of healthcare professionals are needed to meet healthcare demand across the region (Wilbur, Paiva and Black, 2015). This necessitates hiring qualified clinical pharmacists graduating from an accredited programme, QU PharmD programme graduates, into clinical pharmacist positions (Wilbur et al., 2015). Internal unpublished document for the College of Pharmacy, QU, Qatar: Self-Study Report for the Doctor of Pharmacy (PharmD) Programme). Hence, the PharmD programme was approved and established in 2007. Programme planning took place in the period between 2007 and 2010, with more serious planning in 2010 leading to the appointment of the programme director and the formation of a PharmD programme planning committee (Wilbur et al., 2015). Through the PharmD programme, the CPH has continued its strategy of collaboration and involvement with healthcare policy makers in the country, such as the Ministry of Public Health (MOPH), formerly the Supreme Council of Health

(SCH), and practice institutions such as the Hamad Medical Corporation (HMC) (Kheir and Fahey, 2011).

The PharmD programme was launched in September 2011, with the intention to develop student skills by exposing them to various learning experiences across diverse and specialised pharmacy practices to earn an advanced professional clinical pharmacy degree. In addition, the programme was designed to integrate students with other members of multidisciplinary care teams, so that they are qualified to practice the advanced clinical pharmacy upon graduation and to collaborate in the management of patients (Wilbur, 2015). PharmD education supports this advanced role via students undertaking practical placements that are supervised by clinical pharmacists, preceptors or mentors, who are advanced clinical practitioners. Through practical placements students learn the core elements of clinical pharmacy practice by undertaking patient chart reviews, interviewing patients, interpreting laboratory tests, creating therapeutic plans using the best available evidence, and conducting patient follow-up (Wilbur, Paiva and Black, 2015).

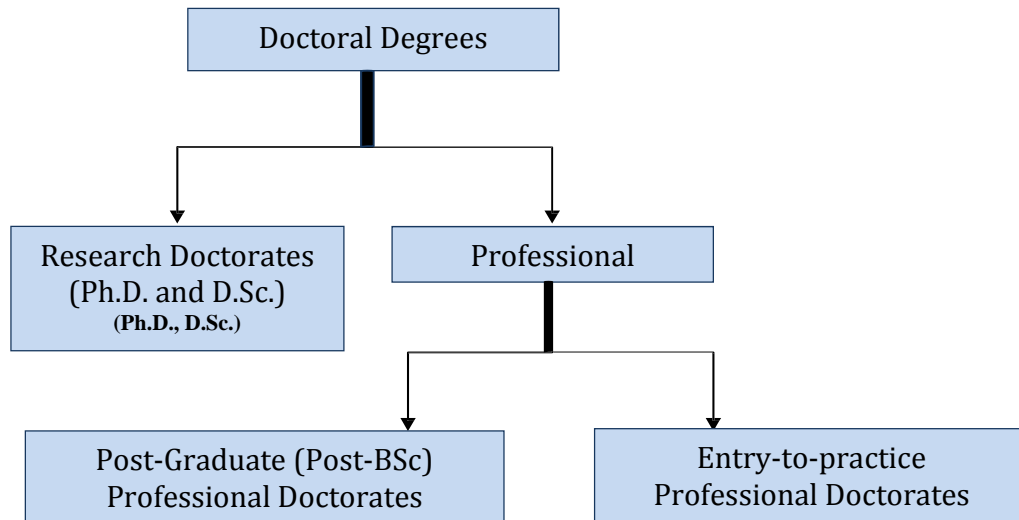
The PharmD programme was designed to build upon the knowledge, skills and attitudes attained in the undergraduate BSc programme. Hence, The PharmD programme was designed to achieve the seven educational outcomes of AFPC (AFPC, 2010a) addressed in the QU BSc programme for first professional degree programmes in pharmacy (entry-to-practice pharmacy programmes), but at a higher level of proficiency. The design of the PharmD programme also took into consideration elements of the earlier AFPC education outcomes for a post-baccalaureate PharmD programme in Canada (AFPC, 1999). Those initial AFPC education outcomes for a post-baccalaureate PharmD programme were: knowledge and thinking abilities; planning abilities; communication abilities; values and ethical principles; self-directed learning abilities; professional identity; and citizenship (Wilbur, Khalifa and Jewesson, 2010).



Although the PharmD programme offers the title of “Doctor”, the degree is an academic professional doctoral degree rather than a research-based doctorate degree. The PharmD degree is thus granted based on the successful completion of both didactic and practical training in the professional discipline of clinical pharmacy. With this training, students acquire the advance practical knowledge needed to meet the advanced practice needs of pharmacy practitioners (Sayed and Al-Shehri, 2012).

The professional PharmD degree could be either an entry-to-practice (first-degree to practice) PharmD degree, or a post-graduate (Post-BSc) PharmD degree (Sayed and Al-Shehri, 2012), as illustrated in Figure 1.1. Further details about these two categories of PharmD degrees in the Canadian and the American pharmacy educational systems will be provided in Section 2.9.1

Figure 1.1 Illustration of the relationship between the various doctoral degrees offered worldwide

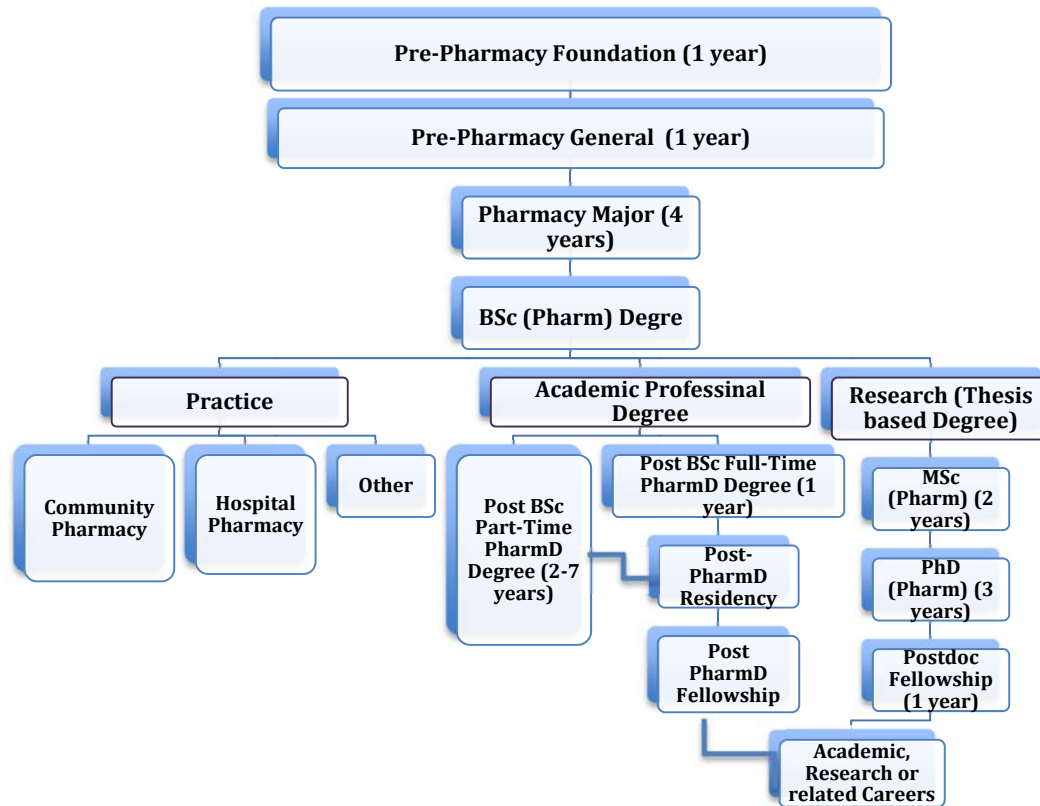


[Reproduced with modifications from (Sayed and Al-Shehri, 2012, p.77)]

In Qatar, the QU PharmD programme offers a post-bachelor (post-graduate) PharmD degree, where the BSc degree is an entry-to-practice or first-degree to practice. One of the PharmD programme's strategic plans for the next 3 to 5 years, however, is to re-establish the PharmD programme planning committee to engineer the conversion of the QU BSc degree into a QU entry-to-practice PharmD degree, as expected by the Canadian Council for Accreditation of Pharmacy Programmes (CCAPP) agency (AFPC, 2010b). This will be further discussed in Sections 1.4.4 and 2.9.1.

Figure 1.2 illustrates the academic degree opportunities for the pharmacy discipline in Qatar, as indicated by the PharmD design committee (Wilbur, Khalifa and Jewesson, 2010) during their design of the QU PharmD programme.

Figure 1.2 Academic degree opportunities for the pharmacy discipline in Qatar



[Reproduced with modifications from QU PharmD programme working document (Wilbur, Khalifa and Jewesson, 2010, p.9)]

#### 1.4.2. The full time PharmD programme

The PharmD programme is offered as both a full-time and a part-time programme. All full-time students are female and are selected from among the current female-only QU CPH BSc programme students. Table 1.1 illustrates the number of full time graduates per academic year. The part-time students include male and female practitioners in Qatar (Wilbur, Paiva and Black, 2015). It is important to note that the focus of this PhD research is the full-time stream of the PharmD programme.

Table 1.1 Number of full time graduates per academic year

Academic year	Number of full time PharmD programme students
Academic year 2011-2012	10
Academic year 2012-2013	8
Academic year 2013-2014	6
Academic year 2014-2015	4
Academic year 2015-2016	6
Academic year 2016-2017	13

The full-time PharmD degree involves a 36 credit-hour year, which is additional to completion of the QU CPH undergraduate BSc degree. Of these 36 credit hours, 32 are delivered as Advanced Professional Practice Internship (APPI) courses, known as clinical internships, rotations or practical placements. For their remaining credit hours students are expected to attend two Advanced Pharmacy Research, Evaluation and Presentation (APREP) skills courses on an academic half day in the university campus, every two weeks (Wilbur, 2015), as shown in Table 1.2.

Table 1.2 Full-time PharmD programme course requirements

Course code	Course name	Credit hours	Location
PHAR605	Advanced Pharmacy Research, Evaluation & Presentation Skills (APREP) I	2	QU Campus
PHAR606	APREP II	2	
PHAR630	Advanced Professional Practice Internship (APPI) I	4	Local/ regional/international healthcare delivery institution
PHAR631	APPI II	4	
PHAR632	APPI III	4	
PHAR633	APPI IV	4	
PHAR634	APPI V	4	
PHAR635	APPI VI	4	
PHAR636	APPI VII	4	
PHAR637	APPI VIII	4	
<b>Total</b>		<b>36</b>	

### 1.4.3. Assessment and evaluation in the PharmD programme

Students are assessed at midpoint and at the completion of their advanced internships by the advanced practice-based preceptor, using a structured assessment tool. The tool was adopted from Canadian PharmD programmes, according to 25 predetermined criteria based on the 168 appropriate student learning outcomes in the curriculum, in accordance with the AFPC learning outcomes. The campus-based APREP I and II courses are pass or fail courses that contain several assessment methods for assessing student understanding and learning, such as projects and exercises. The summative scores of these methods are included in the final grade of the course and are used to evaluate the academic progress of students (Wilbur, 2015; Wilbur et al., 2015).

PharmD students are expected to pass a summative campus-based oral comprehensive examination (OCE) during the final semester of their programme, (Wilbur, 2015). This comprehensive examination has been designed on the basis of the policies and procedures at Canadian institutions (Wilbur et al., 2015). Finally, students evaluate their preceptors and placement sites by completing a site and preceptor evaluation form and give feedback about their learning experiences.

At the level of QU, the Programme Learning Outcomes and Assessment Committee (PLOAC) oversees the level of achievement of the seven AFPC educational outcomes adopted in the PharmD programme, to implement improvement measures that will allow more graduates to achieve these seven learning outcomes at higher levels (Wilbur et al., 2015).

Lastly, the QU Academic Programme Review (APR) department requires all academic programmes to review and evaluate their performance by submitting a self-study report to the APR department every five to seven years, to identify their strengths and weaknesses and to identify areas for improvement, as will be discussed further in Section 6.4.1.1. In compliance with this, the PharmD programme submitted a self-study report (Self-study-D) in 2015. The purpose of the self-study report is the evaluation of, and reflection upon, various PharmD programme processes to ensure continuous quality improvement (Wilbur et al., 2015).

#### **1.4.4. External Accreditation**

In June 2012, the undergraduate BSc programme was awarded full accreditation by the CCAPP, which is the maximum possible accreditation term. In January 2014, the PharmD programme was conferred its first accreditation status as an “entry-to-practice” PharmD degree by the CCAPP, based on meeting the accreditation standards for the first professional degree in pharmacy, whether that degree is a BSc

in pharmacy or an entry-to-practice or first-degree to practice PharmD degree (CCAPP, 2014). The accreditation standards document for the first professional degree in pharmacy, effective for January 2013 and updated in July 2014, and the previous accreditation standards documents (CCAPP, 2006) serve as guidance for programme planning, modification and delivery (Wilbur et al., 2015).

It is worth noting that by 2020 the CCAPP is only going to accredit entry-to-practice 6 years PharmD programmes, and thus all Canadian institutions are moving in that direction (AFPC, 2010b). In line with this, the QU PharmD programme has included in its 3-5 years strategic plan the route for conversion into an entry-to-practice 6 years PharmD programme (Wilbur et al., 2015).

#### **1.4.5. The preceptorship and faculty liaison component of the PharmD programme**

Clinical preceptors or mentors are adjunct faculty members who are responsible for student learning in their practical placements at the practice sites (Wilbur, Khalifa and Jewesson, 2010). The preceptorship model is an approach to teaching and learning where a preceptor acts as a role model and introduces pharmacy students to their current and future job responsibilities within various practical placements (Skrabal et al., 2006). This approach aims to develop student competence by socialising them to real professional practice through practical placements, which increases their self-confidence. The preceptorship strategy also facilitates integration of the knowledge and skills taught in classrooms and those used in real professional practice, thus reducing any possible gaps between them (Billay and Myrick, 2008). The decision to become a preceptor is based on various factors such as financial compensation, personal satisfaction and the possibility of recruiting new pharmacists when they graduate (Austin and Duncan-Hewitt, 2005). At QU, all preceptors are from the heterogeneous population of practicing pharmacists in Qatar, who obtained their qualifications from other countries in the region or across the world (Kheir et al., 2008). Only few of these preceptors have either an advanced clinical pharmacy

degree such as an MSc in clinical pharmacy or a PharmD degree, or have preceptorship experience. As a result of the lack of available qualified clinical pharmacists, the pharmacy directors in practice sites often nominate preceptors because of their experience in the clinical pharmacy field and because of their responsibility for direct patient care, and not necessarily because of their higher level of academic qualification in clinical pharmacy. PharmD preceptors, being adjunct faculty members, receive stipends for their preceptorship from QU.

Many of the preceptors for the PharmD have served as preceptors in the BSc programme's Structured Practical Experience in Pharmacy (SPEP) rotations. SPEP is the experiential component of the undergraduate (BSc) curriculum, and is composed of 24 weeks, distributed throughout the BSc programme. Through SPEP activity, PharmD preceptors were introduced to the preceptorship experience (Wilbur, Paiva and Black, 2015). With that in mind, the PharmD programme has implemented various mechanisms to support preceptors who lack experience in the delivery of structured advanced internships in the North American style, to ensure the quality and consistency of the graduate student learning experience (Burgett et al., 2012).

The programme has recruited a group of faculty liaisons to support student learning experiences. These are full-time campus-based members cross-appointed by the academic faculty at CPH and by the practice sites in the hospitals, such as HMC. Faculty liaisons act as facilitators for both the student and the preceptor, by supporting the teaching and mentoring activities of the preceptors (Billay and Myrick, 2008) and by conducting internship site visits. Through these visits, they contribute to various activities, such as therapeutic discussions, cases reports, and bedside rounds (Black et al., 2013; Burgett et al., 2012).

In the 2013 academic year the PharmD director implemented a faculty advisor plan. As a result, each PharmD student has a designated faculty liaison advisor, who is responsible for following her academic development throughout the PharmD year.



The programme also conducts orientation sessions for students and preceptors to introduce them to various aspects of the PharmD programme (Wilbur et al., 2015).

#### **1.4.6. The design and pedagogy of the PharmD programme as described by the programme documents**

The CPH explains its pedagogical approach in the programme documents, such as the design document and the self-study report, as an “innovative ability-based curriculum and a student-centred approach to teaching and learning” (Wilbur, Khalifa and Jewesson, 2010, p.31; Wilbur et al., 2015, p.81), however, the CPH is not explicit about the basis on which this approach was followed in designing the curriculum, teaching strategies and assessment of the programme.

As will be further discussed in Section 2.9.3, a consideration of the theoretical nature and epistemology of the pharmacy profession is fundamental in pharmacy education. This consideration is key in reducing the challenging gap between pharmacy education programmes and pharmacy practice institutions, as well as between theory, practice and research. Unfortunately, little literature in pharmacy education focuses on the ideology of pharmacy programme design (Waterfield, 2011). The lack of discussion about learning theories in the pharmacy literature has meant that priority has been given to the standards of accreditation bodies rather than the design of academic programmes (Austin and Ensom, 2008; Husband, Todd, and Fulton, 2014). This lack of discussion also suggests a potential disconnect between learning theories and educational practices in the design of pharmacy programmes. This research therefore aims to identify and examine the role of learning theories in the design and implementation of the PharmD programme at Qatar University, by answering a series of research questions.

## **1.5. Research questions**

Overarching question:

How have learning theories influenced the design and implementation of the QU PharmD programme?

Subsidiary questions:

1. Is there is a disconnect between learning theories and educational practices in the QU PharmD programme, and if so, what is the nature of this disconnect?
2. What learning theory is most appropriate in the design of the QU PharmD programme?
3. How does the Communities of Practice (CoP) theory influence the curriculum, teaching strategies, assessment and, ultimately, student experiences?
4. What elements of the CoP theory are evident in the design and implementation of the QU PharmD programme?

## **1.6. The structure of this thesis**

This thesis is divided into seven chapters that reflect the development of the research ideas, describe each stage of data collection, and discuss findings, as described in Table 1.3.

Table 1.3 Structure of thesis

Chapter	Description
One	Introduces the study through a general overview of QU and CPH, followed by a detailed description of the QU PharmD programme, which is the focus of this research. It briefly highlights the research problem and questions, and describes the structure of the thesis.
Two	Presents a literature review of various learning theories, concluding that the CoP learning theory is the most appropriate theory for PharmD programmes. The chapter discusses problems in pharmacy education, highlighting a research problem involving the disconnect between learning theories and educational practices in pharmacy education. This chapter concludes by stating the aim and the objectives of the research.
Three	Describes the epistemological, axiological and ontological philosophies underpinning this research, justifying the use of case study methodology and the creation of a case study-developed theory. The chapter outlines the four stages of the research and explains the quality and ethical measures utilised. It ends by describing each data collection and analysis method, explaining their advantages and disadvantages.
Four	Describes the development of the research idea, from the exploratory stage to more focused research stages. It presents the results of Stages One and Two, and ends by suggesting that there is a need to develop a CoP framework to guide the analysis of the PharmD programme.
Five	Presents Stage Three of this research, which is the development of a theoretical CoP framework. The chapter describes the rigorous process used in developing the framework, and explains that the developed framework will be used in analysing the QU PharmD programme.
Six	Discusses the findings of Stage Four, which is the analysis of the QU PharmD programme based on the developed CoP framework. The chapter identifies gaps between the CoP learning theory and educational practices in the QU PharmD programme.
Seven	Discusses the findings of the different stages of this doctoral research, answering the research questions. The chapter provides discussion of the case study-developed theory derived from the significant results of this doctoral research. The chapter ends by describing the strengths and weakness of the research, and provides recommendations for accreditation agencies, practice and educational institutions and for future research.

## **2. Chapter Two: Literature Review.**

### **2.1. Introduction**

This chapter presents a review of the literature about learning theories, focusing on constructivist learning theory and social theories of learning, including communities of practice (CoP) theory. The chapter starts with an introductory section about the role of learning theories in education, followed by a brief discussion of different learning theories, focusing in detail on the CoP theory, and justifying its selection as an appropriate approach in PharmD programmes. A review of the challenges in pharmacy education is presented, suggesting that there is a gap in the pharmacy education literature regarding learning theories used in pharmacy education. This potential gap indicates a need to consider theory-driven educational approaches when designing and implementing solutions for pharmacy education programmes, such as the CoP theory. This chapter concludes by stating the aim and objectives of this research.

### **2.2. Background: the role of educational theory in educational practice**

Zittleman and Sadker (2015) argue that behind all educational practice lies an educational philosophy and theory. The need to develop an understanding of educational theories is important for four reasons. Firstly, educational philosophies and theories are an essential part of evidence-based educational practice. Secondly, a developed understanding of different learning theories in medical education, from different perspectives, can help educators to select the best instructional strategies, learning objectives and evaluation strategies for their practice from the selected learning theory. Thirdly, teachers are intellectuals who should be able to integrate learning theories, subject matter and student understanding for the sake of improving student learning (Zittleman and Sadker, 2015). Lastly, being able to draw on

theories to explain the impact of individual student differences on their learning outcomes could possibly release educators from thinking that they are solely responsible for everything during the learning process (Wallman, 2010).

These four reasons explain some of the significance of educational philosophies and learning theories, and their connection to educational practices. However, in reality this connection is complicated, because theory usually refers to scientific knowledge rather than verbalised practices (Saugstad, 2002), and therefore there will be further investigation of the important relationship between learning theories and education practice in this thesis.

### **2.3. Learning theories**

To examine the theoretical framework of the PharmD programme, it is important to discuss the conventional adult educational and learning theories that are prevalent in higher education. In the literature, the terms ‘educational theories’ (Sajjad and Mahboob, 2015) and ‘learning theories’ (Arab et al., 2015) are used interchangeably to describe the conceptual frameworks that lead to the acquisition of knowledge, skills and attitude to achieve changes in behaviour, performance or potential. In this study, for consistency, the term “learning theories” is generally used to refer to both learning and educational theory.

The focus of this study is on adult learning theories, andragogy, because the PharmD programme under examination is one that is delivered to adult students. The discussion of different kinds of adult learning theories leads to a discussion of social learning theories including CoP theory, which is the researcher’s theory of choice for PharmD programmes, as will be justified in Section 2.7. The term ‘andragogy’ (andr- meaning ‘man’) could be differentiated from the term pedagogy (paid- meaning ‘child’), and ‘agogos’ in both terms means ‘leading’. The term ‘andragogy’ was developed by Alexander Kapp, a German teacher (1833, cited by Taylor and Hamdy 2013). The term andragogy was later linked to the work of Knowles where

he argued that adults are differently experienced, motivated, oriented, and in need to learn, than children (1988, cited by Taylor and Hamdy 2013). Knowles was the pioneer in applying a philosophy of learning within professional degree programmes for adults, and in integrating constructivism and critical theory of learning, explaining how adults learn, which makes his contribution significant for pharmacy education. Lonie and Desai (2015) reviewed Knowles's work which explained that learners construct new knowledge with what they already know, utilising their judgement, which makes their learning effective and dynamic. Lonie and Desai (2015) explained that Knowles's ideas are particularly important in professional education, such as pharmacy, because they focus on identifying and dealing with differences between what learners already know and what they learn within the experiential component of their programmes.

The use of the term andragogy has been criticised because some principles of andragogy are similar to that of children's learning, which makes the learning a life-long "continuum" with different purposes at different stages. Nevertheless, Knowles's ideas have guided the development of teaching strategies that are suitable for adult learning (Taylor and Hamdy, 2013).

There are relatively variable categorisations and sub-categorisations for learning theories in the literature, so it was easier to adopt and fully understand one of them. This study adopts Taylor and Hamdy's (2013) classification and description of learning theories, because their work is based in a medical education setting. This could have implications, similarities and applications in the education programmes of other health professionals, such as pharmacists. Taylor and Hamdy's (2013) article has also been widely cited in other studies, and used as the foundation of other research. Further, it presents a contemporary review of the literature and provides a useful framework for a deeper theoretical consideration and understanding of the key learning theories that will be explored in this thesis.

Taylor and Hamdy (2013) produced a model that combines several learning theories in one conceptual model. Taylor and Hamdy (2013) argued that their produced conceptual model could be followed when designing education programmes for health professionals. Although this review adopted Taylor and Hamdy's (2013) categorisation of learning theories, Taylor and Hamdy's line of thought about combining learning theories into one conceptual model was not followed in this research. The researcher considered that following Taylor and Hamdy's (2013) line of thought in combining learning theories into one simplified conceptual model could potentially complicate the translation of learning theories into education practice. The reason of this potential complication is that some learning theories overlap (Taylor and Hamdy, 2013), are incomplete on their own, and have limitations (Palis and Quiros, 2014). This overlap and associated limitations in learning theories make identifying their distinctive specific outlines, and consequently combining their different elements, pragmatically unfeasible. For example, transformative learning theories and reflective models can seem similar when applied in reflective thinking and practice.

The works of Torre et al. (2006) and Arab et al. (2015) have been cited several times in this chapter because they are medical education literature that discuss learning theories classifications, in a pattern that resembles that of Taylor and Hamdy's (2013), which has been adopted in this research. These two references provide further details about learning theories, focus on providing practical examples of their application in the professional education setting.

The following learning theories are derived from psychological theories of learning, and their categorisation is influenced by the broad constructivist views of andragogy and of Taylor and Hamdy (2013), indicating that learning is the process of constructing new knowledge on the foundations of existing knowledge. Hence, learning theories are divided by Taylor and Hamdy (2013) into the following categories: instrumental, humanistic, transformative, social, motivational and reflective. Constructivist learning theories have been added to the categorisations for

this thesis, utilising other literature and specifically: Arab et al. (2015) and Torre et al. (2006), and the compiled results are shown in Table 2.1. It is worth noting that the table and discussion below include the names of the originators of the theories and their seminal works, because the founding scholars should not be dismissed. However not all these original works were reviewed in compiling this section of this thesis. Instead, the researcher explained these theories by reviewing more recent literature about them. The full details about those founding scholars and about the citing recent literature are illustrated in the References.



Table 2.1 Learning theories categories

Learning theory	Sub-category/ example	Main scholar/s	Definition	Application in professional healthcare and pharmacy education	Criticism/limitation
Instrumental learning theories	Behavioural theories	Thorndike (1911)  Pavlov (1927)  Skinner (1954)	Focus on how a stimulus in the environment leads to an individual's change of behaviour, one consequence of which is learning. Positive consequences, or reinforcers, strengthen behaviour and ultimately enhance learning, while negative consequences, or punishers, weaken it (Taylor and Hamdy, 2013).	<b>Medical, health and pharmacy education:</b> the behavioural theories are used to develop and evaluate students' clinical skills. For example, in <b>medical education</b> , teachers demonstrate desired behaviours, and learners observe these behaviours. Educators then observe learners and evaluate their competence using scoring rubrics to provide reinforcement (Arab et al., 2015).  <b>Pharmacy education:</b> the behavioural theories are the basis on developing frameworks that measure clinical performance, such as the Foundation Pharmacy Framework (FPF) and the Advanced Pharmacy Framework (APF) (Royal Pharmaceutical Society, 2013; Royal Pharmaceutical Society, 2014; Wright and Morgan, 2012)	Lack of clarity regarding the best method to determine the standardisation of outcomes (Taylor and Hamdy, 2013).  Ignorance of the social aspects of learning (Wenger, 1998).
	Cognitivism	Piaget (1952)  Bruner (1966)	Focuses on the learner's internal environment and cognitive structures, rather than the context or external environment (Torre et al., 2006). Implies that learning primarily takes place in formal education through verbal or written instructions or demonstrations, and includes an accumulation of knowledge that is explicit and identifiable (Abdulwahed, 2010).	<b>Medical education:</b> the cognitivist learning paradigm is useful in using learners' new and previous concepts to design conceptual material systems, such as concept maps. These concept maps help students to recall foundational concepts and understand their complicated relationships (Arab et al., 2015).  <b>Nursing education:</b> the cognitivist learning approach is applied in simulation-based experiences, where the learners internally control the conceived knowledge by utilising previous knowledge and creating new one (Rutherford-Hemming, 2012).  <b>Pharmacy education:</b> cognitive approach to learning is adopted by assuming that learning happens within the	Association with positivist assumption because it considers that knowledge is abstract and symbolic, based on classroom, and not socially constructed. The theory thus underestimates the external dimensions of learning in the workplace and practice settings (Handley et al., 2006).  Inadequate development of the attitudes of health professionals, because of the focus on the acquisition of knowledge and skills without valuing the learning

				individual, and that knowledge and skills are the only requirements when training pharmacy students (Noble et al., 2011).	in real practice (Noble et al., 2011)
	Experiential learning	Kolb (1984)	Focuses on the idea that learners learn when they interact with the authentic environment, and on that educators are responsible for facilitating and organising opportunities for learners to learn from real experiences in real contexts (Abdulwahed, 2010).	<p><b>Professional healthcare education:</b> experiential learning theory is suitable for application in professional healthcare education because it values the practice of professional skills in real life contexts, and hence can be used to design learning strategies for constructing theoretical knowledge, and to develop competencies for professional practice (Yardley, Teunissen and Dornan, 2012).</p> <p><b>Pharmacy education:</b> experiential learning is a skill that provides life-long learning and encourages a student's adaptation to the practical environment. Reflection is a key phase in experiential learning, where pharmacy practitioners reflect on both positive and negative learning experiences and make decisions based on clinical judgements (Tsingos, Bosnic-Anticevich and Smith, 2015).</p>	<p>Focusing solely on individual knowledge development and experience without considering the social context of that experience and its influence on what is learned (Taylor and Hamdy, 2013).</p> <p>In reality learning itself is much more complex and fragmented than is represented by a four-stage cycle (Yardley, Teunissen, and Dornan, 2012).</p>
Humanistic theories or facilitative learning theories	Self-directed learning	<p>Rogers (1963)</p> <p>Maslow (1968)</p> <p>Knowles (1988)</p>	Suggest that learning is self-directed, and that adults can plan, manage, and assess their own learning to accomplish their potential, values, self-motivation, goals and independence in their learning. Learning is student-centred and personalised and educators are facilitators of learning (Taylor and Hamdy, 2013).	<p><b>Medical and healthcare education:</b> self-directed learning is facilitated by advancement in information technology because it allows learners to take full responsibility for their own learning. Self-directed learning is applied through technology-based simulations, problem-solving and role-play experiments that focus on self-direction and self-assessment. The individual motivation implicit in self-directed learning would prepare students for a role in a healthcare team (Torre et al., 2006). This theory is useful as a facilitative learning approach to learn about dealing with unusual and rare and difficult patient cases (Arab et al. 2015).</p> <p><b>Pharmacy education:</b> Self-directed learning paradigm is applied in continuing professional development (CPD)</p>	<p>Do not consider the influence of culture, society and institutional structures on the learning process (Merriam, 2001).</p> <p>Do not consider other forms of learning, such as collaborative learning, because these theories only consider the self-directed and self-motivational aspects of learning (Taylor and Hamdy, 2013).</p>

				programmes, which are designed to support life long learning for pharmacists. Learning through CPD programmes is underpinned by three fundamental concepts: learning is practitioner centred and self-directed, is practice related, and is outcomes oriented. CPD is based on a five-step cycle: reflection and identification of learning needs, plans creation, learning and plans implementation, and finally plans evaluation in relation to the professional practice. Documentation is central to all steps of this cycle (McConnell, Delate, and Newlon, 2015; Rouse, 2004).	
Transformative learning theories	Critical reflection	Mezirow (1978, 1990, 1997)	Focus on transformation of meaning, context and long-standing propositions. Learners are empowered to identify and challenge the validity of their embedded assumptions, referred to by Mezirow as: “frames of reference” (Lonie and Desai, 2015). Learning occurs when new knowledge becomes integrated into existing knowledge, and learners maintain their original “frame of reference”, but continue to challenge and change some of their perspectives “meaning schemes” (Taylor, 2007)	<p><b>Medical education:</b> transformative learning theories are used through critical incident analysis and group discussions, where teachers encourage learners to reflect on their assumptions and beliefs, share ideas and examine specific reflective practices (Arab et al., 2015).</p> <p><b>Pharmacy education:</b> adoption of transformative learning theories help pharmacy educators to integrate transformative and critical reflection teaching and learning strategies into their teaching. This integration allows pharmacy students to acquire self-reflective and metacognitive skills, which will be help them to provide tailored care for their patients, and to adapt to changing healthcare systems (Lonie and Desai, 2015).</p>	<p>Depend heavily on critical reflection while minimising the role of feelings and context.</p> <p>Overlook transformation through the unconscious development of thoughts and actions, while ignoring the role of long-term memory and implicit memory, which shapes present behaviour and attitudes (Taylor, 2001). Present a gap between engaging in critical reflection and revising a perspective, which is the “the desire to change”.</p> <p>Did not clarify the factors that enhance revisions of perspectives, and if they relate to the individual, or the individual’s life, the confusing issue or the particular perspective (Taylor and Cranton, 2013).</p>

Social theories of learning	Zone of proximal development	Vygotsky (1978)	Focus on social interaction, the person, context, community and the desired behaviour, as the main facilitators of learning. The fundamental components of social learning theories are observation and modelling, in which teachers are responsible for providing a supporting learning environment, and clarifying the expected behaviours (Arab et al. 2015; Taylor and Hamdy, 2013; Torre et al., 2006).	<p><b>Medical education:</b> through social theories of learning, trainee physicians learn to perform particular responsibilities in a specific manner during their practical training, by observing the behaviours and performance modelled by their preceptors, and then adopting them. Physicians and other healthcare team members have, throughout history, used learning by observation, especially in recent years (Arab et al., 2015; Torre et al., 2006).</p> <p><b>Professional healthcare education:</b> the use of CoP theory, as one of the social theories of learning, has been explored in <b>medical education</b> (Bates et al., 2013), <b>occupational therapy and physiotherapy education</b> (Roberts, 2015), <b>nursing education</b> (McAllister, Oprescu and Jones, 2014), <b>pharmacy education</b> (Austin and Duncan-Hewitt, 2005; Burton, Boschmans, and Hoelson, 2013) and <b>surgical medical education</b> (Jaye, Egan, and Smith-Han, 2010), as will be explained in Section 2.6.</p>	<p>Ignorance of the mental or emotional state of learners, and their differences due to genetic, brain, and learning abilities.</p> <p>Do not account for the biological, neurophysiological, cultural, linguistic, and historical factors that shape a learner's experiences (Sammons, 2015).</p>
	Situated cognition	Lave and Wenger (1991)			
	CoP	Wenger (1998)			
Motivational models	Self-determination theory	Ryan and Deci (2000)	Imply that adult learning is associated with two fundamental elements: motivation and reflection.	<p><b>Medical education:</b> Kusurkar et al. (2012) argue that motivational learning theories and student motivation were not generally considered as drivers of curricular planning in medical schools. However, while implementing other educational strategies, such as problem-based learning (PBL) and integrated curriculum, student motivation was an implicit outcome. Intrinsic motivation is enhanced by meeting students' needs of independence and competence, by facilitating positive relationships in the learning environment, and by providing students with feedback about their performance for the sake of their improvement. The intrinsic motivation results in learners' enjoyment of learning and practice and commitment to life-long learning for meeting the healthcare needs of patients and</p>	Focus on extrinsic motivation, driven by the concept of "assessments drive learning" (Miller, 1990). In reality, assessments should be used as tools for providing feedback on performance to enhance students learning (Kusurkar et al., 2012).
	Expectancy valence theory	Weiner (1992)			
	Chain of response model	Cross (1981)			

				<p>society. Quality motivation should be enhanced through other means, such as satisfying personal interest or achieving personal goals. Hence, medical students should be introduced to the concept of intrinsic motivation, so that they learn for the sake of clinical practice rather than the concept of extrinsic motivation, which are grades (Kusurkar et al., 2012). This could be applicable to pharmacy education.</p> <p>Sobral (2004) suggested that several external factors influence motivation in <b>medical education</b>, including educational environment, career, and the effect of a learner's stage in medical education training on their personalities and attitudes.</p> <p><b>Pharmacy education:</b> Alrakaf et al. (2015) argue that limited literature discussed the motivations of pharmacy students and their connection with students' academic performance or the learning environment.</p>	
Reflective models	<p>Reflection-on-action</p> <p>Reflection-in-action</p>	Schön (1987)	<p>Schön (1987) suggested that there are two types of reflection: reflection-on-action and reflection-in-action. In the reflection-on action model, learners think about and evaluate the level of relevance or rigour of the processes they have used. The reflection in action model follows the broad constructivist line, and describes the reflection that takes place on the difference between previous knowledge and the new experience. This</p>	<p><b>Professional healthcare education:</b> The reflective learning models are important because they encourage the development of reflective practice and learning systems within organisations and communities, which develop a learner's knowledge and skills.</p> <p><b>Medical education:</b> structured reflection has shown its effectiveness as an instructional method to enhance students' competence, and learning of clinical practice (Mamede et al., 2012).</p> <p><b>Pharmacy education:</b> Tsingos, Bosnic-Anticevich and Smith (2014) argue that there is limited research that discusses the use of reflective practice in pharmacy education, which makes the judgement of the real benefits of reflective practice challenging in this setting</p>	<p>Lack of elaboration on the psychological realities of reflection in action, failure to fully distinguish between reflection in and on action, failure to clarify what is involved in the reflective process and also failure to account for the significance of the time dimension in relation to decisions taken after the undergoing the reflective process (Smith, 2001).</p>

			leads to the formation of abstract concepts, which will lead the learners to test their own knowledge, through investigation. (Taylor and Hamdy, 2013).	However, the application of reflective theories of learning in a second-year undergraduate pharmacy curriculum allowed the integration of theory and practice, enhanced the critical thinking, problem-solving, self-directed and life-long learning of students, which allowed students to make informed decisions and clinical judgements. The reflective models in pharmacy need to be evaluated as students progress across professional years, and from the classroom into the practice settings. Also, the implementation of reflective theories requires integrated instructional and assessment methods (Tsingos-Lucas et al., 2016).	
Constructivism	Cognitive constructivists	Ausubel (1968)  Piaget (1952)	Focuses on that individuals perceive, interpret and explain the same object differently. Those individuals then construct new knowledge through the interaction between their previous skills and knowledge, the skills and knowledge gained from social interaction with peers and teachers, and social activities. Knowledge is not passively gained from outside the minds of learners. Instead, it is actively constructed based on a learner's environment, the physical and social world, which makes it relative (Kang, Brian and Ricca, 2010). Constructivism is based on the interaction between cognitive	<b>Professional healthcare education:</b> constructivist approaches to learning, combined with Kolb's model of are the foundation of the experiential learning model, implicitly applied in health professional degrees (Botma et al., 2015). These approaches and models emphasised learning by action, concrete experiences and reflections, and consequently, they implicitly shifted the focus of learning from content-based to learning outcome-based. Furthermore, a scoping review of the social constructivist learning theories as knowledge translation for healthcare professionals suggested that generally there is limited research about the use of constructivist learning theories in health profession, and that knowledge emerging from a constructivist process in clinical settings is a valuable source of clinical evidence. It is thus clear that the major characteristics of social constructivism theory align with knowledge translation in the healthcare professions, which makes it useful for healthcare professional education (Thomas et al., 2014).  <b>Medical education:</b> the constructivist learning theory	Tends towards epistemological relativism, which considers that absolute truth does not exist, and that it exists in relation to cultural, societal, or contextual aspects.  The quasi- religious or ideological aspect of constructivism, which results from its objective to be the human epistemology of 'truth' and knowing.  Ignorance of the importance of passive learning, memorising and other traditional strategies.  Separates the human mind from the external world by over emphasising the role of learning environment (Liu and Matthews, 2005).

	Socio-cultural constructivists	Vygotsky (1978)	psychology and social psychology and it takes into account both the cognitive and the social dimensions of learning.	<p>has guided medical education strategies, such as dynamic group discussions, problem-solving approaches, journal clubs, course portfolio development, and critical appraisal. The application of Vygotsky's zone of proximal development (ZPD) concept in medical education is represented by a teacher's demonstration of tasks, followed by the scaffolding of a learner's independent practice, which exposes them to a range of practices that they can then incorporate into their own practice. This facilitates learners' development to their upper level of ZPD (Arab et al., 2015; Torre et al., 2006).</p> <p><b>Pharmacy education:</b> Kang, Brian, and Ricca (2010) argue that the advantages of constructivist-based education in pharmacy outweigh the disadvantages, especially after demonstrating the effectiveness of constructivist-based education in other health professional academic programmes. Hence, pharmacy educators should understand the constructivism theory to prepare students to construct their own knowledge, which makes their learning student-driven, and to prepare students to apply key taught concepts in real situations through knowledge recontextualisation (Kang, Brian, and Ricca, 2010).</p>	
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### ***2.3.1. Instrumental learning theories***

Instrumental learning theories include behavioural theories, cognitivism and experiential learning.

#### ***2.3.1.1. Behavioural theories***

Focus on how a stimulus in the environment leads to an individual's change of behaviour (Pavlov, 1927; Skinner, 1954; Thorndike 1911, cited by Taylor and Hamdy 2013 and Torre et al., 2006). Behavioural theories aim to change student behaviour in the direction of the desired goal of learning (Torre et al., 2006) and are the basis of competency-based curricula and training programmes. They are useful in developing and standardising learning outcomes, because they allow students to know what will be learned, the performance conditions, and the measures of assessment. Within the behaviourist paradigm, educators are responsible for controlling the learning environment, to achieve a specific response, which represents a teacher-centred approach to teaching (Torre et al., 2006).

#### ***2.3.1.2. Cognitivism***

Cognitive learning theories are associated with mental and psychological processes to facilitate learning by assigning meaning to events such as insight, information processing, perceptions, reflection, motivation, metacognition and memory (Bruner, 1966; Piaget, 1952, cited by Taylor and Hamdy, 2013). So they are about the sense the learners make of the new knowledge that they acquire. Within the cognitivism paradigm, communication, inference and problem-solving facilitate information processing and transmission, and the role of the teacher is to direct the learner's capacity for self-directed learning.



### *2.3.1.3 Experiential learning*

The philosophical principle underpinning experiential learning is that of the ‘constructionist’, which acknowledges the existence of competing truths and different versions of realities (Yardley, Teunissen and Dornan, 2012).

Kolb is the key experiential learning scholar (1984, cited by Taylor and Hamdy, 2013). Kolb built his work on experiential learning upon the works of Bruner’s and Piaget’s theory of cognitive development. (1966; 1952, cited by Taylor and Hamdy, 2013). Kolb (1984) believed that learning and knowledge construction are facilitated through experience, and described the learning cycle as having four phases: concrete experience, reflective observation, abstract conceptualisation and active experimentation. Kolb’s experiential learning cycle allows apprehension, comprehension, intention and extension (Yardley, Teunissen and Dornan, 2012).

### **2.3.2. Humanistic theories**

Humanism is a paradigm that emerged in the 1960s and focuses on human freedom and dignity to achieve full potential. Key scholars of humanism supported this theory by developing the concept of “andragogy”, such as: Rogers (1963, cited by Taylor and Hamdy, 2013), Maslow (1968, cited by Taylor and Hamdy, 2013) and Knowles (1988, cited by Taylor and Hamdy, 2013). Within the humanist paradigm, learning takes place for the purpose of self-actualisation and self-fulfilment, so that learners reach their maximum achievable potential (Arab et al., 2015; Torre et al., 2006). Self-directed learning is one of the educational applications of the humanist theory, in which learners are responsible for planning, performing, and evaluating their learning experiences.

### **2.3.3. Transformative learning theories**

These theories emphasise the critical reflection process needed to challenge a learner's beliefs and prior assumptions (Mezirow, 1978; 1990; 1997, cited by Taylor and Hamdy, 2013).

Transformative learning involves three stages. The first stage involves experiencing a confusing issue or problem and reflecting on previous perspectives about the event. The second is engaging in critical evaluation and self-reflection on the experience, which requires metacognitive thinking. The third stage is taking action about the issue, based on self-reflection and previous assumptions, which leads to a transformation of meaning, context and long-standing propositions.

### **2.3.4. Social theories of learning**

Social learning theories integrate the concept of behaviour modelling with those of cognitive learning, so that the understanding of the performance of a task is strengthened (Arab et al. 2015; Taylor and Hamdy, 2013; Torre et al., 2006).

Vygotsky (1978), a social constructivist scholar, whose work focused on children's learning, explained that learning communities support learning in children. Vygotsky (1978) introduced the idea of ZPD, and explained that there is a difference between what a child can accomplish individually and what they can accomplish with expert advice and support. He highlighted the importance of scaffolding, which involves planning for the effective utilisation of resources and educators in facilitating the learning process. Bandura later expanded the ZPD concept by claiming that a learner's new ideas in the context of their current understanding can increase the ZPD (1977, cited by Arab et al., 2015 and Taylor and Hamdy, 2013). Although the ZPD concept was originally introduced as a way for explaining children's learning, it has been widely considered in adult learning and education.

The importance of context and community was developed in situated cognition theories, which consider learning and thinking as social activities, managed by the specific learning tools available in any specific context (Wilson, 1993, cited by Taylor and Hamdy, 2013). For example, the learning tools in a bedside context are different from the learning tools in an operating room context.

The significance of learning communities in guiding learners was further developed by Lave and Wenger's (1991) "situated cognition" and then by Wenger's (1998) "communities of practice" (CoP) theories. These theories are useful in understanding how social interaction influences knowledge transfer, learning and behaviour.

#### **2.3.5. Motivational models**

Motivational models imply that adult learning is associated with two fundamental elements: motivation and reflection. Examples of motivational theories are self-determination theory (Ryan and Deci, 2000, cited by Taylor and Hamdy, 2013), which focuses on intrinsic motivation; the expectancy valence theory (Weiner, 1992, cited by Taylor and Hamdy, 2013), which incorporates the expectancy of success; and the chain of response model (Cross, 1981, cited by Taylor and Hamdy, 2013), which focuses on three internal motivating factors: self-evaluation, the attitude of the learner towards education and the importance of goals and expectations.

#### **2.3.6. Reflective models:**

Schön suggested that there are two types of reflection: reflection-on-action and reflection-in-action (1987, cited by Taylor and Hamdy, 2013). While reflection-on-action allows people to reflect on their activities and views after they happen. Reflection-in-action allows people to reflect while the activity and thinking are happening (Thomas, 2008).

It is important to note that there are similarities between Mezirow's (1978; 1990; 1997) critical reflection model and Schön's (1987) models of reflection on action in that they both reflect on old assumptions and knowledge, which then require action to change. Although the terms "reflection" and "critical reflection" are used interchangeably in the literature, not all reflection is critical. Critical reflection engages higher and more challenging levels of thought, and thus becomes an originator of transformative learning for both learners and educators, by connecting old and new knowledge to examine learning conditions more holistically. The connection between old and new knowledge and the examination of the holistic picture leads to changes in understanding and behaviours (Lucas, 2012).

Reflection helps students make meaning of complex situations and enables them to learn from experience in authentic practice. Reflective learning varies according to a student's ability to reflect on their experiences, clinical problems and the context of practice. A student's reflective thinking and practice can develop over time with a supportive learning environment and encouraging educators. Learners need a structured guide for reflection, as well as constructive feedback about their reflections, from their educators. This feedback on reflective practice and thinking helps learners to identify their strengths, weaknesses, and learning needs and encourages them to search for appropriate evidence for their reflective decisions (Mann, Gordon, and MacLeod, 2009).

### **2.3.7. Constructivism**

Constructivism is an epistemology and a psychological theory of learning that explains knowledge and the meaning making processes. Ausubel (1968, cited by Taylor and Hamdy, 2013) and Piaget (1952, cited by Taylor and Hamdy, 2013) are the main scholars among the cognitive constructivists, and Vygotsky (1978) was the first scholar in socio-cultural constructivism, a social theory of learning, which emphasised the broader socio-historical and situated dimension of learning and development. Vygotsky's (1978) ideas were further developed, in the field of

workplace learning in the late 1980s and early 1990s, into the theory of situated cognition (Lave and Wenger, 1991) and work on CoP theories (Wenger, 1998). The constructivist theory approaches pedagogy and learning holistically, focusing comprehensively on the internal cognitive mechanisms that underlie the learning processes, participation, and social interaction (Ultanır, 2012).

Applying constructivist theory in education programmes requires changes to educational practices and making a distinction between teaching and learning by giving up the passive reception approach to learning for self-directed learning approaches. Within the constructivism paradigm, the teacher is a facilitator who guides learners and allows them to build their knowledge to make their own meanings and conclusions. Constructivist strategies in teaching are thus often referred to as ‘student-centred instruction’ (Ultanır, 2012). Various forms of constructivist learning share the main concepts, such as learning in informal work contexts and authentic environments, social interaction and linking the taught elements with the learner’s previous knowledge (Abdulwahad, 2010). Social constructivist perspectives encourage a clinician’s acquisition and application of knowledge in their practices and interactions, while emphasising the role of learning ‘context’ (Thomas et al., 2014).

In this study, particular emphasis is placed on constructivist and social theories of learning, as these are contemporary and particularly relevant to pharmacy education.

## **2.4. Learning communities and work-based learning**

According to the constructivist theory, the social and cultural environment, which exists in both the classroom and in informal work contexts, shapes the way learners construct knowledge and skills. This makes knowledge and skills context-dependent (Siebert, Mills and Tuff, 2009). The significance of the informal work context necessitates a discussion of learning communities and work-based learning, because these concepts helped in the development of the main concepts of the CoP theory.

Meiklejohn initiated the concept of learning communities by arguing that a learning environment could be formed outside the classroom if students and faculty live together in a learning community (1932, cited by Wylie, 2012). He therefore founded the first learning community to provide opportunities for faculty and students to review and synthesise what they had learnt in the classroom. Dewey investigated experiential and cooperative learning and suggested that learning takes place in the context of experience outside the classroom, because learners become engaged in open inquiry, rather than teacher dominated learning (1938, cited by Wylie, 2012).

Tussman is one of Meiklejohn's students (1969, cited by Wylie, 2012). He later designed a two-year reflective academic programme of History, Philosophy, English, and other general education courses. Through this programme, Tussman conducted the Experiment at Berkeley, where students and faculty became engaged in the intellectual themes of reflection, discussion, reading, writing and lecturing. The Experiment at Berkeley represented a purposefully designed foundation for learning communities. Tinto supported Meiklejohn, Dewey and Tussman by indicating that colleges should shift from classrooms into learning communities to produce collaborative learning opportunities (1997, cited by Wylie, 2012). During the same period, Greeno, Pearson, and Schoenfeld stressed the significance of the situatedness of learning, participation in authentic contexts of practice, and the learning environment as a whole, for positively influencing student knowledge development (1999, cited by Sayer, 2007). Eraut (2004) demonstrated that students apply theoretical knowledge, and acquire practical skills and clinical reasoning and problem-solving skills, when placed in appropriate practice settings. He developed ideas about work-based learning and informal learning in the workplace.

Aligned with these efforts, Lave and Wenger (1991), in their situated learning theory, argued that working environments are learning environments, where informal learning takes place.

## **2.5. CoP theory: Definition, background and characteristics**

The ideas of informal, work-based, and social learning, and the theories of situated learning were developed further by introducing the CoP theory, where participation in the CoP seeks to represent the reality of practice (Jaye, Egan, and Smith-Han, 2010).

The CoP is one of the social theories of learning proposed between the late 1980s and early 1990s by two scholars, Jean Lave, a social anthropologist, whose research interest is social theory, and Etienne Wenger, a teacher and a PhD holder in the area of artificial intelligence. Together they developed the situated learning theory (Lave and Wenger, 1991), which involves a process of engagement in a CoP. They continued their work independently to develop a better understanding of learning in practice (Lave, 1996) and to enhance the CoP theory (Wenger, 1998; Wenger, McDermott and Snyder, 2002). Lave and Wenger (1991) and Wenger (1998) supported situated learning and CoP theories by demonstrating five case studies of apprenticeship, which led to the acceptance of the theories by researchers in the field. Hence, this evidence-based approach to research is a major strength of CoP theory (Engeström, 2007).

CoPs are groups of people who share a concern or passion, defined by knowledge rather than task, for something they do, and learn how to do it better as they interact regularly (Wenger, 1998). This learning from each other through formal and informal interactions facilitates the development of expertise by sharing a social context (Kothari et al., 2015). The CoP theory emphasises two main foundations for situational learning, the activity-based constructivist foundation, which highlights context; and the anthropological foundation, which highlights social participation (Andrew, Tolson and Ferguson, 2008).

Members of these CoPs are either core members (experts), or peripheral members (learners). It is the responsibility of core members to help peripheral members to become more central participants. Learning in a community thus involves an equal

relationship between experts and learners, instead of the traditional relationship between teacher and student in classroom learning (Kothari et al., 2015) or a top down relationship (Roberts, 2015). Hence, Vygotsky's (1978) ZPD is important in addressing the needs of different learners and in identifying the gap between what the learners are able to do when they join a community and what they can do when assisted by an expert. These abilities to learn vary according to the work organisation, learner participation and support from experts (Skøien, Vågstøl and Raaheim, 2009).

There are three fundamental elements of a community of practice: the domain, the practice and the community. The domain is the common concern, mission, or passion, which all members of the community share. The practice is the fundamental tacit and explicit knowledge that the members distribute and expand. The community involves the reciprocal relationships between members that result from their engagement in learning through practice (Wenger, 1998). These relationships are represented by accountability, trust, and communication, which give the CoP its distinct identity (Bentley, Browman, and Poole, 2010).

CoPs are distinguished from departments, teams or work groups by boundaries, commitment, identity and a life cycle, which is determined by the need to continue this CoP (Kislov, Harvey, and Walshe, 2011). Within the community, members have explicit and implicit roles to establish their professionalism, teamwork, communication skills, life-long learning, competence, and knowledge reification (Duncan-Hewitt and Austin, 2005).

## **2.6. Previous studies about CoP**

The use of CoP in a variety of learning situations to achieve valuable outcomes has been examined across different sectors. This was demonstrated by a systematic review about CoPs use in the business and healthcare sectors (Li et al., 2009b) and a similar systematic review about their establishment in the healthcare sector



(Ranmuthugala et al., 2011b). The available research about CoP in the healthcare sector was related to physicians, surgeons, nursing, allied health sectors, such as occupational therapy and specific care groups such as diabetes and mental health (Wilding, Curtin, and Whiteford, 2012).

The use of CoPs in business and health sectors focused on knowledge distribution, construction, management and identity construction. In the healthcare setting, CoP was applied as a strategy to encourage innovation, support health systems, increase people's quality of life and improve clinical practice (Kothari et al., 2015). It was also applied to develop health policies (Bertone et al., 2013) and to improve the quality of research in health practices (Jiwa et al., 2011). In spite of the variability of these studies, Roberts (2015) claimed that there is generally a limited amount of CoP research within the healthcare sector, particularly into the outcomes of the adaptation and adoption of previously introduced CoP evaluation frameworks (McKellar et al., 2014).

Fung-Kee-Fung, Boushey and Morash (2013) created a standardised CoP framework to reduce the gap between the CoP conceptualisation and application in healthcare settings, and they used this framework as a platform for regional collaboration in cancer surgery. This CoP framework was used in subsequent research to understand knowledge sharing in the leaders in indigenous medical education (LIME) network (Mazel and Ewen, 2015), as mentioned in Sections 2.8, 2.9.4, 5.5 and 7.2.1.

In addition to the examples mentioned above, the use of CoP has also been explored in healthcare education, such as: medical (Bates et al., 2013; Pugsley, 2008), occupational therapy and physiotherapy (Roberts, 2015; Skøien, Vågstøl, and Raaheim, 2009), nursing (McAllister, Oprescu and Jones, 2014; Thrysoe et al., 2010), pharmacy (Austin and Duncan-Hewitt, 2005; Burton, Boschmans, and Hoelson, 2013) and surgical medical education (Jaye, Egan, and Smith-Han, 2010).

Some CoP research in healthcare education has focused on achieving specific outcomes. For example, Hart and Wolff (2006) investigated local community and university partnerships, Steinert (2011) investigated medical faculty development, Lees and Meyer (2011) discussed the facilitation of inter-professional education (IPE) and Holden et al. (2015) explained the main challenges that hinder CoP implementation as being the lack of a CoP conceptual framework and lack of outcomes and process measures.

## **2.7. Rationale for choosing CoP theory over other theories in this research**

This section contributes to answering the overarching research question of this study,

How have learning theories influenced the design and implementation of the QU PharmD programme?

by answering the second research question:

What learning theory is most appropriate in the design of the QU PharmD programme?

To answer the second research question, it is important to highlight two key issues.

The first issue: several healthcare education studies have highlighted the significance of using one learning theory in the design of a professional healthcare education programme for the sake of enhancing the consistency between the curriculum planning, the teaching strategies and the assessment activities. For example, Botma et al. (2015) argued that teaching and learning activities should ideally be integrated with outcome and assessment activities through the

development of conceptual frameworks for educational design. However, educators usually consider more than one learning theory in the design and implementation of an educational programme, because they believe that each learning theory has something to offer, which makes it useful. Furthermore, Sadideen and Kneebone (2012) explained that creating a framework based on a selected learning theory could act as an evaluation tool for teaching strategies and as a predictor for the best teaching strategies in a particular setting, such as practical skills teaching. They noted that such a framework facilitates consistency. In line with this literature, it was felt that using one learning theory, the CoP, in the design and application of the PharmD programme enhances the consistency between the curriculum planning, the teaching strategies and the assessment activities. Further discussion about the importance of the explicit and comprehensive implementation of one learning theory, the CoP learning theory, in the PharmD programme, based on this research finding, is provided in Section 7.2.3.

The second issue: health education literature does not explicitly and comprehensively discuss the relevance and appropriateness of CoP theory to professional healthcare education programmes, including PharmD programmes. Hence, the rationale for choosing CoP theory over other theories in this research is explained below by synthesising ideas in the health education literature about CoP theory. The literature summary in Sections 2.7.1-4 demonstrates that adoption of CoP theory in pharmacy education, including PharmD programmes, is beneficial for all stakeholders involved in the education process, including: students, academic faculty members and professional practitioners. Hence, this literature indicates that adopting CoP theory enhances the performance of all PharmD stakeholders, who are CoP members, which ultimately improves the students' learning experience. Furthermore, adopting CoP theory has a fundamental role in knowledge transfer, research productivity, and integration between theory and practice and between research and practice.

Sections 2.7.1-4 will identify and discuss the benefits of adopting the CoP theory generally in PharmD programmes to student learning, faculty and practitioner performance, knowledge transfer, and research quality, and integration between theory and practice and between research and practice, based on ideas extracted from healthcare education literature. Appendix 2.2 illustrates the search term utilised to identify the key literature discussed in this chapter. There is further discussion of the rationale for selecting the CoP learning theory in this research in Section 7.2.2, by indicating the appropriateness of the CoP theory in addressing issues encountered specifically in the QU PharmD programme.

### **2.7.1. Student learning**

CoP theory improves students' learning experiences by situating them in experiential placements. The benefits of experiential placements for students include: application of theoretical classroom knowledge; development of disciplinary knowledge, skills and attitudes; understanding of the profession; acquisition of professional characteristics; connection with peers; development of professional identity and exposure to members of the multi-professional team (Owen and Stupans, 2009; Owen et al., 2011), as well as enhanced confidence and readiness to practice (O'Neil and Berdine, 2007). These benefits could be achieved by involving academics, preceptors and students in the learning process (O'Neil and Berdine, 2007).

In pharmacy education, educators made curricular developments that move them away from information storage and retrieval into experiential learning, so that students transform textbook knowledge into real learning experiences, preparing them for professional practice (Frankel, Louizos, and Austin, 2014; Jungnickel et al., 2009). With that in mind, the goals of experiential placements in pharmacy are likely to resemble the goals and concepts of CoP, which makes the CoP theory a suitable theory for implementing experiential learning in pharmacy education.

CoPs are important for student learning because they give students the opportunity to participate in, and adapt to, the CoP. Participation in CoP activities is a fundamental factor in learning in healthcare education, such as nursing, because it is based on real learner-centred activity and interaction with members of the staff and multidisciplinary team (Thrysoe et al., 2010). This participation in a CoP brings student perspectives to practice, which promotes a shared vision of care through the real shared practice (Jaye, Egan and Smith-Han, 2010). Student participation also facilitates their achievement of professional competence and the development of a positive image of the profession (Hägg-Martinell et al., 2014).

CoP offers the students a “student-friendly” environment in the professional community, allowing them to engage in an unknown world. Participating in CoP gives students the opportunity to utilise the available learning resources, which facilitates students in moving from legitimate peripheral participation to full participation in the CoP. This learning is dependent on how students perceive themselves and how other members of the community perceive them (Skøien, Vågstøl and Raaheim, 2009).

CoP fosters authentic assessment and feedback, because students in CoP are involved in daily authentic patient care, which develops their professional responsibility and professional skills. When the learning environment and relationships are supportive, students value the unstructured and informal assessments and feedback that are based on mentor supervision of their real practice. Similarly, in this environment students accept critical feedback because it helps them to become reflective practitioners and more competent (Bates et al., 2013).

It is worth noting that some components of CoP theory are applicable to IPE, such as engagement, imagination and alignment. These fundamental CoP concepts can act as enablers for IPE learning, being used in case-based, observation-based or PBL (Lees and Meyer, 2011). CoP and IPE concepts can thus work together to achieve the best learning experiences and outcomes for students. Student collaboration with

other healthcare providers helps them to optimise all resources and conditions for the best outcomes for patients, which places patients and societies at the centre of inter-professional activities. Patients become partners in their care by sharing perceptions and experiences with healthcare providers (Hall, 2006).

The CoP approach helps education programme designers to think about the specific characters of the graduates that the programme aims to graduate, ensuring their ability to survive in a continuously changing professional field. Exposing students to the experience of practicing while they are students facilitates their survival within a complex environment and the graduation of the planned “certain type of person” (Noble et al., 2011). With that in mind, the CoP approach changes the student situation at the practice sites, from being a burden and resource-consumer to being contributors and novice practitioners, with progressive levels of expertise (Duncan-Hewitt and Austin, 2005).

### **2.7.2. Faculty and practitioner performance**

CoP theory provides ongoing educational support to develop the knowledge and skills required for the best practice of healthcare providers. This knowledge and skills development helps them to evaluate and modify their practice, by integrating new research evidence and updated practice guidelines, to cope with the complex healthcare practice environment (Roberts, 2015).

Faculty participation in CoP enhances knowledge and skills development in areas relevant to educational portfolios, such as teaching, research, and administration. For example, faculty in CoP share knowledge and expertise related to core teaching competencies, barriers to effective teaching, curriculum planning, technologies, continuing education, and research. Faculty development is achieved through the facilitation of group learning activities and the combination of informal and formal approaches to learning. This faculty development is fundamental to curricular, educational and organisational advancement (Steinert, 2011).

For practitioners, Spilg, Siebert and Martin (2012) explained that post-qualification learning is based on a situated approach, where novice doctors learn by working with more experienced doctors in clinical settings. The developed interpersonal bonds, dialogue and co-participation in professional practice, are important for professional development (Spilg, Siebert and Martin, 2012). Hence, it is important to consider the differences in social, economic and political factors between different healthcare professionals, because they influence professional development needs (Spilg, Siebert and Martin, 2012). This co-participation in professional practice is also important for facilitating access to shared data and expertise, which enables reflective practice and peer-based critical analysis by other practitioners (Parboosingh, 2002). However, Rolls et al.'s (2016) in evaluating the use of social media by healthcare professionals in the development of virtual communities to share knowledge noted that the literature has not investigated the efficacy of the participation of healthcare professionals in the CoP, for enhancing their professional development and clinical practice. They added that that these virtual communities could potentially reduce knowledge exchange because of tribal behaviours, and hence further research is required to evaluate the effects of social media on knowledge exchange among healthcare professionals, and on meeting patients' needs, after ensuring the successful implementation of CoP theory.

CoP increases the feeling of ownership and independence that members, particularly practitioners, have when they take responsibility for training students in practice. This increased ownership, confidence and independence enhances job satisfaction and improves recruitment and the retention of employees (Bentley, Browman and Poole, 2010). For example, Wilding, Curtin and Whiteford (2012) demonstrated that creating a CoP for practitioners with a focus on scholarship, as in 'CoP scholars', was very beneficial for occupational therapy practitioners.

Wyatt et al. (2016) indicated that legitimate peripheral participation in the CoP enhances physicians' professional identity building, and consequently their dedication, because the majority of physician development happens through

socialisation to the workplace. They added that as physicians' competence develops, their identity building improves, until they reach the ultimate total dedication status. In pharmacy as well, CoP facilitates the formation of a professional identity for educators through membership in both pharmacy- and education-related CoPs. The formation of a professional identity will be influenced by participation in a number of CoPs, because each CoP has a unique set of knowledge and expertise, confidence, expectations, beliefs and motivation for professionals. The influence of participation in several CoPs on a member's professional identity is continuous and is what Wenger (1998) calls a "nexus of multi-membership" (Burton, Boschmans and Hoelson, 2013). Membership of academic mentors in academic-based and practice-based CoPs leads to "identity negotiation", which has the potential to increase professionalism (Duncan-Hewitt and Austin, 2005). Burton, Boschmans and Hoelson (2013) suggested that within a CoP, three structural and three emotional determinants underpin the educator's professional identity. The structural determinants are influenced by the CoP environmental context and are comprised of: expected role, knowledge base, and practice; while the emotional determinants are influenced by the activities and social aspects of the CoP and are comprised of: professional status, passion and satisfiers.

CoP is also important to practitioners' and academics' partnerships, which can underpin the development of community university partnerships. These partnerships have mutual benefits if cultural and the environmental factors are addressed through effective arrangements, such as removing boundaries for shared learning, recognition of different expertise, and reciprocal accountability (Hart and Wolff, 2006).

Lastly, CoP encourages a professional and scholarly-oriented connection among educators. For example, the Nurse 2 Educator (N2E) approach, which is based on CoP theory, facilitates the combination of expertise, innovations and evidence among educators, and the progression of practitioners from clinicians to novice educators, and then to expert educators (McAllister, Opreescu and Jones, 2014).



### **2.7.3. Knowledge transfer**

CoP enables knowledge circulation among peers and members of the CoP through engagement in practice, which encourages practitioners to reflect and act. Reflection and action help the development of progressive practice competencies, with the involvement of all members, from novice to experts, while taking into consideration standards from regulatory bodies. These progressive practice competencies should guide recruitment and career planning, and hence, the implementation of the CoP approach facilitates the engagement of members in shaping their own future and professional practice (Hall, 2006).

CoP is also an enabler of knowledge management and organisational change, through the integration of tacit and explicit knowledge, to ensure that the evidence-based practice undertaken is relevant to the specific context. Integration happens when experienced staff share their explicit knowledge and expertise, “tacit knowledge,” with students and novices, and through CoP strategies, such as mentoring, coaching, medical rounds and journal club discussions (Sandars and Heller, 2006).

Reification takes place when implicit knowledge, supposed to be acquired in practice settings, is made explicit, by teaching it as materialistic facts in classrooms. Classrooms provide reified knowledge, which is meaningless without student practice of that knowledge through practical placements, and therefore participation in CoP provides an opportunity for the negotiation of meaning, rather than the simple reception of reified knowledge. This enables the combination of both experience and reified knowledge in student learning (Hall, 2006).

Finally, the implementation of CoP theory provides opportunities for knowledge recontextualisation, which implies that knowledge learnt in one context (the university) could be re-contextualised in another (the workplace). Knowledge is not transferred by students as a unit, but is dynamically constructed and restructured into personal meaning for each student, in a new practice environment, with the help of a

mentor (Evans, Guile, and Harris, 2009). The concept of recontextualisation is also related to the constructivist learning theory, as explained in Section 2.3.1 and Table 2.1. This relation and the overlap between the constructivist and the CoP learning theories led to placing a particular emphasis on them in this thesis, because of their relevance to healthcare education, as discussed in Section 2.3.

#### **2.7.4. Research productivity and quality**

Pugsley (2008) indicated that applying CoP theory in medical and health education helps to build a research culture and infrastructure for students and supervisors. Within this network, students and supervisors collaborate and support each other by sharing knowledge and expertise, and by discussing the critical philosophical and methodological issues underpinning evidence-based medical education research. These discussions and relationships between participants in CoP facilitate the strengthening of the theoretical and philosophical rigour of medical education research (Pugsley, 2008).

The CoP approach enables the involvement of health care practitioners as mentors in the education process, including research, and the establishment of relationships with academics and scholars. Involving health care practitioners with academics and scholars in research leads to quality improvement in practice research, because it provides them with control over research topics as the experts in practice. This involvement also increases their motivation and commitment, strengthens their sense of responsibility for research quality, and makes them part of healthy organisational change (Jiwa et al., 2011).

#### **2.7.5. Integration between theory and practice and between research and practice**

Participation in CoP reduces the gap between theory or knowledge, and practice or action, through reflective practice. Reflective practice is a key ability that

practitioners should acquire to handle difficult and contrary situations of practice. Reflective practice combines ‘hard’ and ‘soft’ knowledge and enables the development of professional practice standards (Waterfield, 2011).

CoP is also fundamental to collaboration between practitioners and academics, which is beneficial for both, as mentioned in Section 2.7.2. For example, practitioners become more oriented to research methods and skills, while academics improve their quality of research because they become closer to real practice. This reduces the gap between research and practice. Student observations of the collaboration in research between practitioners and academics prepare them for cooperative practice situations, which improve the quality of their education. Academic–practitioner collaboration in research can be facilitated by building relationships between the groups. Through these relationships they are able to understand each other’s explicit and tacit knowledge sets, and work across their real and important tacit differences, through legitimate and shared participation in each other CoPs (Bartunek et al., 2003; Ousey and Gallagher, 2010).

The above sections provide a rationale for selecting the CoP theory in this research by suggesting (based on ideas extracted from healthcare education literature) that the attributes of the CoP theory fit well in the education of health professionals, including pharmacist education. This rationale and discussion make the case for designing professional degrees in health education, such as the PharmD programmes, based on CoP an appropriate choice. Furthermore, the previous discussion contributes to answering the second research question about the most appropriate learning theory in the design of the PharmD at QU. More detailed consideration of the CoP literature in healthcare professional education will take place in Chapter five for the purpose of developing the CoP framework, which will be used as a theoretical instrument for analysing the QU PharmD programme.

## **2.8. Discussion of challenges, limitations and critiques of CoP theory**

In spite of the growing interest in CoP theory, there is limited literature about the process used to build it up, its outcomes, and evaluation approaches (Fung-Kee-Fung, Boushey and Morash, 2013; Holden et al., 2015). According to the literature reviewed, there is no consensus regarding the best method or mechanism with which to evaluate CoP impact and success (Fung-Kee-Fung, Boushey and Morash, 2013; Holden et al., 2015; McKellar et al., 2014).

In the healthcare sector, the structure of CoP is variable. Some CoPs are informal networks, with unclear domains and definitions, others act as support groups, which aim to improve self-efficacy, and other CoPs are confused with multidisciplinary teams. This lack of consistency in CoP structure in the healthcare sector complicates the description, and evaluation of CoP (Li et al., 2009a).

In educational literature, CoP has been used for professional development, research enhancement and the interpretation of learning and education (Wenger, 2010). Educational literature did not describe the role and the approach to designing educational systems based on CoP or the process to comprehensively utilise the theory in all aspects of education programmes.

Several authors have criticised CoP theory. Some of these critiques were acknowledged and justified by Wenger (2010).

One of the critiques of CoP is the intra-community and inter-community conflict that happens within and beyond CoP, which is based on the conceptualisation of ‘community of practice’. Individuals usually participate in several CoP at the same time during their lifetimes, and each can have relatively different practices, experiences and identities. As a result, individuals who participate in more than one CoP continue to apply adaptation and adoption techniques to different participation and identity formations within various communities, which creates tensions, conflict in roles and places, and instabilities within their CoP. This limits an individual’s

ability to sort their identities and roles in every CoP, because each individual has their own norms and experiences, which result from engagement with their families, societies, workplaces, and other CoPs. The norms and experiences might match or conflict with those of other CoP members.

With that in mind, intra-community and inter-community tensions and conflicts need to be understood, negotiated and partially resolved. However, these tensions will never be fully resolved, because in reality the development of identities and practices is not only within a CoP, but also in the spaces between multiple communities (Handley et al., 2006). In response to this critique, Wenger (2010) suggested that identities mirror experience and practice landscapes as well as the journey within and across communities and contexts. Wenger used the term “nexus of multi membership” to describe simultaneous belonging to multiple communities at any given time, whether they complement or conflict with each other. He explained that identity formation accumulates multiple previous and current community experiences, memories, practices and relationships, to provide the real self image and meaning making. When building a CoP, it is important to understand the “nexus of multi membership” concept and to ensure that differences in cultural, societal, and background experiences among members are considered. This helps CoP designers to avoid the assumptions of perfect match and absolute homogeneity within CoP. In this research, differences in the regional and contextual aspects of an organisation have been considered as a challenge to CoP implementation, which demonstrates awareness of the significance of this factor, as will be discussed in Section 5.7.1.

Another criticism of CoP is that it neglects the issue of power, represented in conflicts and disagreement, and assumes coherence, stability and homogeneity. Contu and Wilmott (2003) argued that the managerial agenda and managerial interventions might limit or prevent the notion of knowledge sharing, due to disagreement with certain ideas and concepts. They added that CoP theory overlooked the institutional context and environment of learning practices, in favour

of the description of managerial control and member relationships, which have a great influence on the formation of identity. In response to this criticism, Wenger (2010) explained that in CoP theory, power is at the centre of accountability, engagement, standards of practice and competence, however, this power is horizontal, mutual, negotiated, tacit and informal. Each learner in CoP claims competence to secure a place in the community. This claim and struggle over a meaning to define, referred to by Wenger as “economy of meaning”, creates conflicts. A member’s identity within a community thus implies their accountability to the regime of competence power, which means that practice is responsive to power.

Wenger did not ignore the traditional vertical accountability and power, represented by hierarchies and authorities; rather he emphasised horizontal accountability and power. He further explained that there should be interplay between horizontal and vertical forms of power to promote the learning experiences at the organisation level. This interplay can often create tension. CoP theory thus appears to account for horizontal power and ignores vertical power, which is not the real case. Both powers are important in maintaining a balanced system. In this research, the vertical power, represented in organisational hierarchies, and the horizontal power, represented in the rigidity of competence, have been considered as challenges to CoP implementation, as discussed further in Section 5.7.1. This demonstrates that the power factor was not ignored in proposing the CoP as an appropriate theory for healthcare education.

Kupferberg suggested that CoP theory is a narrow interpretation of learning, which makes its application in the modern landscape of learning inappropriate (2004, cited by Andrew, Tolson, and Ferguson, 2008). This was supported by Engeström’s (2007) claim that CoP is anachronistic and distant from the original notion of apprenticeship and the history of real societies and patterns of organising work. He argued that CoP represents learning processes that cannot play a prominent role in learning in different eras. He therefore supported other dynamic structures that are

more fluid in nature, such as: mycorrhizae, where learning happens in an unstructured manner. In response to Engeström's critique, Wenger (2010) suggested that CoP theory aimed to provide a learning foundation in social sciences, rectifying previous foundations, however, he acknowledged that some of these foundations might change as contexts progress. In this research, the developed CoP framework included six inter-related sections, representing a dynamic process that evolves over time with changes in contexts and circumstances, as will be discussed further in Section 5.8.

Similarly, Brown and Duguid criticised CoP theory for not giving enough consideration to learning in a web-enabled globalised world (2000, cited by Filstad, 2014). They considered thinking about learning in terms of networks, rather than communities, as more relevant and responsive to the fluid connectivity requirements of this century. Wenger (2010) explained that networks, which emphasise connectivity, and community, which emphasise identity, could complement each other by enhancing group learning in a social structure. He explained that introducing networking energy to the community is an effective way to strengthen it, by shaking it up and reducing its boundaries (Wenger, 2010). Hence, this research accounted for the significance of networking and connectivity among members by considering that communication and reciprocal relationships and knowledge exchange are a major enabler to CoP implementation, as will be discussed in Section 5.7.1.

Another criticism of CoP theory is its shift from an analytical concept to an instrumental one. CoP is now used as a technique or prescribed process to create a process, which dilutes its insights (Hughes, Jewson and Unwin, 2007) or as a knowledge management tool (Roberts, 2006). Wenger (2010) acknowledged this criticism and explained that CoP theory has been used inconsistently in organisations, diverting from its origin, which might have reduced its value. He suggested that CoP theory has positively affected organisations by fostering horizontal integration, participation, personal meaning and identity. These positive

influences will ultimately reshape the discourse on knowledge and learning gradually, and he therefore concluded that the associated tension from the combination of analytical and instrumental aspects of the CoP theory is beneficial in focusing on the learning capabilities of social systems. In this research, the developed CoP framework can be used as an instrument to design new programmes or analyse existing ones, as will be discussed further in Section 5.8. This allows the framework to have dual utilisation (prescriptive and analytical) in professional healthcare education. Furthermore, identifying the tension between the use of CoP as a conceptual and an instrumental tool was insightful, because it enabled the identification of different interpretations of CoP as a challenge in the CoP framework, as discussed in Section 5.7.1.

It was important to understand the criticisms of CoP before developing the CoP framework, which is an important stage of this research (Chapter Five). This understanding facilitates the recognition of the challenges associated with the CoP framework development, its potential, and future implementation.

## **2.9. Pharmacy education**

Historically, professional pharmacy education was based on the apprenticeship model. During the last two centuries, the responsibility of professional education has shifted to universities, to avoid excessive variation in the quality of learning and to provide efficient teaching of the pharmaceutical sciences (Duncan-Hewitt and Austin, 2005). Unfortunately, this shift has had the disadvantage of creating an ever-widening gap between knowledge reification and practice within schools of pharmacy, as well as between schools of pharmacy and practice sites in hospitals (Austin and Ensom, 2008). Pharmacy schools are also striving towards making explicit what was previously implicit, or acquired by practical experience, which is problematic (Waterfield, 2011).



Before proposing a solution for these problems, it is important to understand the trends and challenges of pharmacy education, the direction of contemporary pharmacy education research and the different proposals for curriculum restructure. The following section will describe the trends and problems of pharmacy education in the USA, Canada, Australia, the UK, Saudi Arabia and Qatar. The choice of these countries is not meant to be exclusive of important issues that might take place in other countries. Rather, it is meant to illustrate the main issues of pharmacy education in the parts of the world that are undergoing significant changes within pharmacy education, which are relevant for this thesis.

### **2.9.1. The status of pharmacy education in different regions**

#### ***A. Canada and USA***

In Canada, pharmacy education has changed significantly in the last decade, and will continue to change with ever-changing healthcare characteristics and pharmacist roles. The changes in pharmacy education have been influenced by the characteristics of professional Canadian health education, such as: a strong research system; a government-funded healthcare system; a “college” regulatory system for healthcare professionals; and collaboration between the educational and regulatory system. These characteristics of professional health education contributed to the development of trends in pharmacy education research, which focus on enhancing the existing BSc degree programmes, the experiential education components of education, developing continuing professional development programmes, and training the next generation of academic pharmacists (Austin and Ensom, 2008).

Generally, all pharmacy schools in Canada should meet the same educational outcomes, which are those of the AFPC (AFPC, 2010a), for the aim of achieving the NAPRA competencies (NAPRA, 2014). However, each school of pharmacy has its own pedagogical philosophy and strategies, which are associated with their needs and resources. For example, some schools adopt a traditional approach to the curriculum, focusing on pharmaceuticals, medicinal chemistry, and pharmacology in

the early years, and the clinical coursework in later years. Other schools give more consideration to IPE, the integrated curriculum and experiential education, and adopt a problem-based curricular design (Austin and Ensom, 2008; Frankel, Louizos, and Austin, 2014).

Recently, the AFPC mandated that all pharmacy schools should move towards an entry-to-practice PharmD programme for 2020 (AFPC, 2010b). Adding the new accreditation standards of the entry-to-practice PharmD programmes to the existing accreditation standards facilitates this move, so that the newly added and existing accreditation standards together comprise the entry-to-practice PharmD programmes accreditation standards. These standards were released in 2014 (CCAPP, 2014), as mentioned in Section 1.4.4. The move to entry-to-practice PharmD degree programmes is an opportunity for schools to restructure and change the pharmacy curriculum, however, pharmacy schools are not yet clear about the best approach to this curriculum restructure. Some of the literature has suggested standardising the admissions screening process to accept students with critical-thinking and leadership skills. Other research has suggested introducing IPE education early in the pharmacy programme, to develop communication teamwork and decision-making skills.

Finally, some literature has proposed that the expansion of experiential placements is a fundamental aspect of a curriculum restructure, demanding an increase in clinical resources. The clinical resources could be augmented by providing support for preceptors; increasing the duration, scope and quality of practical experiences; increasing student-to-preceptor ratios; and encouraging student mentorship models (Frankel, Louizos, and Austin, 2014).

In the USA, the Millis Commission published a report in 1975 that called for curriculum reform (Millis, 1976), and led to an extension of education to the PharmD programmes. This call provided a new direction in which to prepare pharmacists for effective pharmacotherapy interventions. The Accreditation Council for Pharmacy Education (ACPE) later developed new accreditation standards for

PharmD programmes, so that all colleges of pharmacy could eventually deliver a six-year PharmD programme as the entry-to-practice. The ACPE believed that this additional year of advanced clinical practice would help students to practice efficiently and effectively in the current healthcare system. In the coming decades, the expected future pharmacy education and practice trends in the USA will be inter-professional-based practice, pharmaceutical care, computerisation and automation, standardised direct patient care and medication services, collaboration in prescribing and certificated specialised clinical pharmacists. With these trends, the evolution of pharmacy education and the profession will continue to thrive (Lin, 2012).

Kehrer, Schindel and Mann (2010) explained that pharmacy schools in both Canada and the USA act as independent entities, even when they face relatively similar challenges and opportunities, and do not collaborate or seek input from each other in areas related to pharmacy education or continuing professional development. Hence, Kehrer, Schindel and Mann (2010) suggested that increased effective collaboration across both states/territories and countries would facilitate the sharing of greater resources and expertise. For example, each pharmacy school could take the lead in advancing a particular aspect of pharmacy education at which it excels, and share it with other schools. Such collaboration facilitates the understanding of differences and enables discussion about the best approaches to improving pharmacy education and patient care (Kehrer, Schindel and Mann, 2010).

### ***B. The UK***

A pharmacy degree in the UK has generally been considered to be a science degree rather than a clinical qualification, in contrast to other UK healthcare professions and to pharmacy education in other countries. This scientific identity is a ‘hangover effect’, which has persisted from the historic scientific roots of the pharmacy discipline and has resulted in the increased science content of the curriculum. The historical scientific roots of pharmacy, represented by a lack of integration between science and practice within pharmacy education, is currently being contrasted and

supplemented with an increase in pre-registration practice-based teaching, to make pharmacy a more clinically-orientated profession, with special focus on IPE (Langley and Aheer, 2010; Waterfield, 2015; Wright et al., 2006). Knowledge and curriculum integration in a culture governed by a scientific identity has been and is now a major trend in pharmacy education research in the UK (General Pharmaceutical Council, 2011). Curriculum integration can be facilitated by increasing the awareness of science faculty members of the importance of clinical application, and equally by helping clinical faculty to recognise the original discovery and value of scientific concepts within the clinical setting (Waterfield, 2015).

The General Pharmaceutical Council (GPhC) is the regulator for pharmacists, pharmacy technicians and pharmacy premises in the UK. GPhC drives the agenda of pharmacy education by setting standards for learning, competencies and pre-registration training, as well as ensuring the quality of this learning and training. According to the GPhC, the four-year MPharm degree is separate from the 52-week pre-registration training. However, there is discussion about mandating an integrated MPharm degree in the near future, which combines academic study and pre-registration training in pharmacy schools (General Pharmaceutical Council, 2011; Husband, Todd and Fulton, 2014).

In 2010, there were changes in pharmacy regulation, which provided an opportunity to change the existing quality management of the pre-registration system. These changes were expected to improve the pre-registration training system, by clearly indicating topics for educational activities, regulations of assessment, syllabus outlines, training outcomes and the quality assurance process (Mills, Blenkinsopp and Black, 2014). To maintain the personal and professional development of pharmacist post-registration, two competency frameworks were developed independently of the UK pharmacy regulator, initially by the Competency Development and Evaluation Group (CoDEG.). These competency frameworks are: the General Level Framework (GLF) and the Advanced and Consultant Level

Framework (ACLF) (CoDEG, 2007; CoDEG, 2009). These frameworks were adopted and revised by the professional representation body, the Royal Pharmaceutical Society (RPS) and are now known as the Foundation Level Framework (FLF) for the first 1000 days in practice and the Advanced Pharmacy Framework (APF) for practice beyond that time. These frameworks provide a structure for vertical and horizontal professional pharmacist development (Royal Pharmaceutical Society, 2013; Royal Pharmaceutical Society, 2014; Wright and Morgan, 2012)

### ***C. Australia***

In Australia, registered pharmacists need to complete a four-year BSc in Pharmacy, followed by an approved one-year internship training programme, which is comprised of real supervised practice. The Pharmacy Board of Australia is responsible for this pre-registration internship process (Noble et al., 2015). The status of experiential learning, and of competency approaches to assessment, is uncertain because they are generally influenced by changes in the higher education and healthcare sectors (Owen and Stupans, 2009), which necessitate the development of robust and supportive relationships between universities and practice preceptors (Chaar et al., 2011). Similar to the UK, there is a post-pharmacist registration competency framework that aims to support pharmacists' professional practice. These competency standards undergo review and changes regularly for the purpose of complying with changes in the Australian healthcare system by the Pharmaceutical Society of Australia (Owen and Stupans, 2009).

The pharmacy education literature suggests that pharmacy graduates in Australia struggle to recognise their identities as pharmacists after they enter actual practice. This identity problem is associated with the lack of a unified global statement about the pharmacy profession, which has resulted in variable practices, from dispensing to comprehensive medication review services, and therefore it is important that pharmacy students are exposed to a range of experiences and are trained by

accredited pharmacists. In this way, students can act as agents of change, finding their true identity, and investigating the best scope of practice (Noble et al., 2015).

#### ***D. Saudi Arabia***

In Saudi Arabia, some pharmacy schools adopt the PharmD as the terminal entry-to-practice degree in their programmes, following the USA system. King Abdulaziz University (KAU) adopted the PharmD as the only entry-to-practice terminal degree. However, King Saud University (KSU) kept both the original entry-to-practice BSc degree track as an entry to practice terminal degree, in addition to the entry-to-practice terminal PharmD degree track. Most PharmD degree programmes are composed of six years (1 year of preparatory courses, 4 years of pharmacy courses, and 1 year of clinical internship). The mixed practice in considering both the BSc and the PharmD programmes as terminal degrees is confusing for the higher education sector, the professional licensing agencies and employers (Sayed and Al-Shehri, 2012).

There are an increasing number of interested students in PharmD programmes each year in different pharmacy schools in Saudi Arabia. This increased interest in PharmD programmes is challenging, because it demands more sites and preceptors to support student learning in practical placements. This could be achieved by proposing competitive salaries that attract staff to clinical practice, providing professional development opportunities for preceptors, improving student exchange programmes, and establishing joint clinical appointments between the pharmacy schools and hospitals. Hence, the development of a coordination office in pharmacy schools, to coordinate student placement activities and assessment, is important (Aljadhey, 2013).

The National Commission for Academic Accreditation and Assessment (NCAAA) is the official national accreditation agency for academic institutions and programmes. The Saudi Commission for Health Specialties (SCFHS) is the national

formal agency responsible for examining, registering and licensing healthcare professional in Saudi Arabia, including pharmacists (Sayed and Al-Shehri, 2012). Some pharmacy academic programmes were granted external accreditation from international agencies. For example, KSU was awarded a full certification status for its BSc and PharmD programmes from ACPE (Vlasses et al., 2014).

### ***E. Qatar***

In Qatar, the QU pharmacy college is the only college of pharmacy. The college offers an entry-to-practice BSc, a postgraduate PharmD, an MSc in Pharmaceutical Sciences and an MSc in Clinical Pharmacy Practice degree programmes. In 2012, the undergraduate BSc programme was awarded full accreditation by the CCAPP, and in 2014 the PharmD programme was conferred an “entry-to-practice” PharmD degree accreditation status by the CCAPP. The QU PharmD programme is considering the conversion into an entry-to-practice 6 years PharmD programme in its 3-5 year strategic plan, as expected by all CCAPP accredited institutions (Wilbur et al., 2015), as mentioned in Chapter One.

The pharmacy curriculum is currently designed to enhance integration, the clinical application of pharmaceutical care, and case based and PBL strategies (Kheir and Fahey, 2011). Pharmacy education has progressed actively and quickly compared to pharmacy practice, which has been left behind (Kheir et al., 2008), especially community pharmacy practice. Therefore the motivation and leadership of pharmacy academics, the strong role of the local Continuing Professional Pharmacy Development (CPPD) programme provided by QU, and the influence of experiential learning in the pharmacy programme curriculum should act as triggers to facilitate the advancement of pharmacy practice in Qatar (Kheir and Fahey, 2011). Since the pharmacy programmes at QU are relatively new, recent literature discussing major issues pertaining to the PharmD programme is limited but includes the role of faculty liaison (Wilbur, Paiva and Black, 2015) and the critical evaluation of the final summative assessment approach (Wilbur, 2015).

### **2.9.2. Approaches to curriculum design**

Discussing the variable issues of pharmacy education in different parts of the world raises important questions about the approaches to curriculum design in the last few decades to manage these issues. The last few decades have been characterised by a constantly changing healthcare environment, especially with the trends of social, political, and economic globalisation, and with subsequent changes in the pharmacy profession and pharmacist roles (Duncan and Gleason, 2015).

The pharmacy profession has recently changed from focusing on pharmaceutical and medicinal products to focusing on patient care, medication outcomes and making an active contribution to the healthcare team. The role of the pharmacist has shifted from that of being a dispenser to being a clinical pharmacist, a decision-maker, and an advanced practitioner. Currently pharmacists are caregivers, decision-makers, communicators, managers, life-long learners, teachers, leaders and researchers (Noble et al., 2011). This role shift is associated with the need for an accompanying shift in education (Frankel, Louizos and Austin, 2014).

One of the trends that has influenced pharmacy education is globalisation. Globalisation has been associated with an expectation of developing standardised competencies and curricula for pharmacists (Anderson et al., 2012). Zeitoun (2011) argued that the development of a unified educational system is unrealistic because healthcare systems and expectations are complex and variable in different countries. He proposed that the development of an appropriate educational system requires local needs assessment, followed by the relevant competency determination. This needs-based education model necessitates the active collaboration of all stakeholders within countries, and within organisations (Anderson et al., 2012).

Several international organisations are working together to assess local needs and pharmaceutical services and to develop suitable competencies, which can meet local needs and services. Examples of those international organisations are: the Pharmacy Education Action Plan of the World Health Organisation (WHO), the United National Educational, Scientific and Cultural Organisation (UNESCO), and the



International Pharmaceutical Federation (FIP) (Zeitoun, 2011). The global pharmacy competency framework and the global framework for quality assurance developed by FIP can thus be used by countries and organisations to improve pharmacy education, while keeping the focus on meeting the needs of local patients (Anderson et al., 2012). However, it is essential to recognise that in a constantly changing healthcare environment, pharmacy schools can never teach everything. It is important that pharmacy schools decide on the knowledge required by assessing student learning needs and encouraging them in continuous development, which keeps them on the “uncomfortable edge” of their competence. Duncan and Gleason (2015) introduced a three-dimensional (3D) curriculum framework, which is composed of the following three methodologies: identifying the required knowledge, skills, and attitudes for professional practice; developing clinical teaching strategies that bridge theoretical and practical knowledge; and creating assessment methods that ensure the combination of cognitive, social, and affective abilities. The resultant 3D curriculum facilitates the development of professional competence. The proposed 3D framework comprises a curricular plan that explains knowledge, skills and attitudes, teaching strategies and assessment. It is worth noting that the main components of the proposed curricular plan are similar to the proposed CoP framework in this research.

To deal with changes in the healthcare system and the expanding needs of society, some pharmacy schools introduced social and behavioural sciences within a pharmacy context to the scientific curriculum in pharmacy. Social, behavioural and clinical pharmacy dimensions lack clear and consistent definition, philosophy, and aims in terms of underlining knowledge and skills, however, which makes their inclusion variable (Waterfield, 2011).

Similarly, PBL and enquiry-based learning (EBL) were introduced in some pharmacy schools for the sake of integrating knowledge from two or more subject disciplines and developing practice skills. In PBL and EBL, students are expected to solve problems, which is one of the most important learning outcomes (Waterfield, 2011). In the University of Bradford in the UK, team-based learning (TBL) has been

adopted to develop students with transferable skills that improve their practice abilities in the workplace, and develop stronger self-motivation for learning. Tweddell, Clark, and Nelson (2015) noted that the TBL approach demonstrated its effectiveness in aligning course content, expected outcomes, and teaching activities, which ultimately leads to curriculum integration.

IPE is also a major initiative and challenge for pharmacy schools and other healthcare programmes, which aims to broaden integration. Through IPE, students from two or more professions are provided with a structured collaboration and learning opportunity for the purpose of enhancing their knowledge, skills, and attitudes, and ultimately preparing them for their future roles in improving the quality of patient care (El-Awaisi et al., 2016; Joseph et al., 2012). In connection to that, El-Awaisi et al. (2016) argue that pharmacy academics in the Arabic-speaking Middle Eastern countries indicated their readiness to incorporate IPE into curricula if they are provided with the required professional, cultural, infrastructure needs, and adequate training.

Another dynamic area of discussion in literature on pharmacy education research is that of integrating education and professional practice in pharmacy schools. In his book “The Reflective Practitioner”, Schön (1987) explained the distance between the university, professions, research and practice and suggested that this distance requires action, for which he proposed the ‘reflective practice’. Schön’s emphasis on the notion of reflective practice is relevant to pharmacy education, where there is a clear tension between technical knowledge and standards in professional practice, and where the epistemology of practice and competency are inexplicit. One of the proposed solutions is to focus on placement-based learning and to enhance the ability of educators to teach students in these settings. This will ultimately enhance student reflection skills throughout their careers (Waterfield, 2011). To prepare students for progressing roles in an increasingly complex world, they should be provided with opportunities to experience the uncertainties of practice environments. Schools of pharmacy have therefore started to focus on providing more authentic

environments for learning by increasing practice placements and enhancing opportunities for recontextualisation of learning. This has been challenging because it should be associated with a different understanding of the curriculum, and therefore pharmacy schools should restructure the overall curricular experiences, outcomes, and the necessary competencies, rather than thinking solely about knowledge and skills (Noble et al., 2011).

Austin and Ensom (2008) indicated that the pharmacy education literature offers different directions in curriculum development to deal with the ever-changing and demanding healthcare environment, and different sources of pressure. However, these development and restructuring efforts were generally coping strategies rather than strategic solutions that aimed to establish long-term educational policies. Some of these strategies have thus resulted in curricula that give students a greater breadth of academic exposure to basic, clinical, social and administrative sciences and practices. Investigating the optimal strategies for curriculum restructuring, and implementing those strategies, will continue to be key in determining the direction of the pharmacy education and profession and in meeting the learning needs of students and society (Austin and Ensom, 2008; Frankel, Louizos, and Austin, 2014).

### **2.9.3. Theoretical perspective on professional healthcare education including pharmacy**

The consideration of the theoretical nature, ideas, norms and beliefs of the pharmacy profession and the underlying aspects that inform the philosophy of pharmacy education are key to restructuring efforts in pharmacy education, because these factors affect pharmacists' roles and the gap between pharmacy schools and practice (Waterfield, 2011). It is therefore essential to think about the epistemology and scope of the pharmacy profession, and about preparing pharmacy graduates to fulfil this scope, while explicitly recognising the professional identity of the pharmacist. Unfortunately, there is only a limited amount of pharmacy education literature that has focused on the scope of the pharmacy profession and the ideology of curriculum

design when discussing approaches to pharmacy education restructuring (Waterfield, 2011).

The significance of theoretical considerations in professional healthcare education was stressed by Benner, Tanner and Chesla (2009) who argued that theoretical knowledge is formed by practice and consequently influences practice. Unfortunately, important learning pedagogies that consider learning as socially constructed are not fully implemented in the educational practices of healthcare education programmes. Reasons for this lack of consideration and implementation seem to vary between different countries, and have potentially led to variable outcomes. For example, in the UK, one of the reasons for this lack of implementation is the structural arrangement of the National Health Service (NHS) and higher education organisations and their independent roles, which keep them disconnected (Allan and Smith, 2010). This functional disconnection in the UK health and educational services has resulted in theory, practice and research disconnects (Allan and Smith, 2010). In other countries, such as Canada, the lack of discussion on educational theory, and giving it adequate consideration, has led to accreditation bodies dictating the educational agenda, and the extent to which theory appears in these accreditation standards is variable (Austin and Ensom, 2008). This dictation of the educational agenda by accreditation bodies could also be the case in other countries, such as UK (Husband, Todd, and Fulton, 2014).

Moss, Grealish and Lake (2010) suggested that there is a need to advance the understanding of the pedagogy of graduate programmes in professional health education generally, and in post-graduate nursing education particularly. This understanding can be improved by conducting more research into the influence of pedagogy on the main components of curriculum design: content (concepts), delivery, and assessment. It is also important that educators explicitly explain the benefits of implementing graduate pedagogies in professional health education programmes, such as enhancing practice, and encouraging professional development (Moss, Grealish and Lake, 2010).

Pharmacy educators should think about the nature of pharmacy knowledge and the philosophical perspectives that underline pharmacy education, rather than pragmatic perspectives. This thinking will help pharmacy educators to subsequently restructure the curriculum by giving more theoretical consideration to the pharmacy profession and education (Waterfield, 2011).

#### **2.9.4. CoP theory in healthcare practice and in healthcare and pharmacy education**

CoP is one of the social theories of learning that can be used either as a tool to analyse practice or as an instrument to achieve specific aims and outcomes in professional healthcare education, such as a PharmD. It focuses on specific, clear domains, such as learning, meaning, and identity, which subsequently facilitate the development and implementation of theory-informed interventions and evaluation.

In healthcare organisations, CoP theory has been used as a theoretical method to analyse practice, or as a practical method to support shared learning and knowledge transfer, because these practice organisations require a flexible framework that will guide, rather than prescribe, their development (Ranmuthugala et al., 2011b). Using CoP as an analytical or instrumental tool in healthcare organisations resulted in improving their performance (Kislov, Harvey and Walshe, 2011). Fung-Kee-Fung, Boushey and Morash (2013) created a CoP framework to reduce the gap between CoP conceptualisation and implementation in healthcare settings. This framework was used in medical practice to implement CoP in cancer surgery (Fung-Kee-Fung, Boushey and Morash, 2013). It was also used in medical education as a theoretical lens to better analyse the effectiveness of the collaborative process in the LIME Network (Mazel and Ewen, 2015), as will be further discussed in Section 7.2.1.

Noble et al. (2011) argued that implementing the social theories of learning and student-centred learning provide excellent opportunities for curricular restructure.

Noble et al. (2011) noted that if curricular restructuring is in the direction of CoP, then pharmacy schools culture will be focused on professional development and educational development of students. This will positively affect all members of the community (Jungnickel et al., 2009), as explained in Section 2.7.

Duncan-Hewitt and Austin (2005) proposed a fundamental restructuring of pharmacy education, considering pharmacy schools as expert CoPs. They suggested that the CoP theoretical model in pharmacy education could be implemented by designing an environment where students, residents, practitioners, and faculty members work together and learn from each other. They further explained that CoP implementation would expand student and pharmacist expertise and enhance the successful application of pharmaceutical care concepts within the current complex health system (Waterfield, 2011). This successful application of pharmaceutical care through CoP would improve medication therapy management and medication safety (Somma and Meyer, 2007).

Austin and Duncan-Hewitt (2005) defined the network of CoP (NCoP) as an educational system that balances contributions and reification while circulating best practices and explicit knowledge among CoP. NCoPs are envisaged as the most authentic learning environments, aimed at developing social and intellectual values. Austin and Duncan-Hewitt (2005) argue that adopting CoP theory requires:

1. Restructuring departments around types of practice responsibilities rather than around the practice and science paradigm,
2. Integrating pharmacy practice and education,
3. Reversing the structure of curricula, so that learners learn practice first and then learn the theory and scientific concepts behind practice,
4. Preparing faculty members to help students to construct knowledge, and assess their construction abilities,
5. Financially championing the CoP.

Austin and Duncan-Hewitt's work foregrounded the importance of integrating pharmacy education with practice and the CoP was a credible proposal for how to achieve this. Whilst the idea of NCoP was not accepted or adopted widely (Noble et al., 2011), there is still scope to examine the expert CoP model more closely, and consider it as a wider framework for the continued development of pharmacy education (Waterfield, 2011). In this doctoral research, a CoP framework is developed to investigate whether the CoP can be used to design and implement solutions for pharmacy education programmes, focusing on the QU PharmD programme.

## **2.10. Research aims and objectives**

This research aims to uncover and examine the role of learning theories in the design and implementation of the QU PharmD programme.

The research aim can be achieved through the following objectives:

1. Explore whether any learning theory influenced the design and implementation of the QU PharmD programme.
2. Explore the nature of any disconnect between learning theories and educational practice at QU PharmD programme.
3. Develop a CoP framework to describe how learning theories could shape the curriculum, teaching strategies and assessment of PharmD programmes.
4. Use the developed CoP framework to analyse the QU PharmD, aiming to examine the implications of any disconnect from a learning theory perspective.
5. Frame a case study-developed theory about the role of learning theories in educational practices.
6. Provide practical, scholarly, and theoretical recommendations about the effective use of the CoP theory and about the role of learning theories in effective programme design and practice.

### **2.11. Summary of chapter**

This chapter presented a review of the literature relating to learning theories, focusing on social theories of learning. The selection of CoP theory as a suitable approach for application in PharmD programmes was then discussed. A review of the problems and research directions in pharmacy education was presented. This review suggested that there might be a gap in the pharmacy education literature regarding the learning theories used in pharmacy education. A need was identified to consider CoP theory in designing and implementing pharmacy education programmes. The chapter ended by stating the aims and objectives of the research.



### 3. Chapter Three: Methodology.

#### 3.1. Introduction

The previous chapter presented a review of the literature relating to learning theories and pharmacy education, with a special focus on CoP theory. A review of the problems and research directions of pharmacy education was presented, suggesting a gap in the pharmacy education literature regarding learning theories, and indicating a need to consider CoP in designing and implementing solutions for pharmacy education programmes. In this chapter, the epistemological, axiological and ontological philosophies underpinning this research are presented, justifying the research methodology and research methods. The research questions, ethics and trustworthiness of the data are discussed in detail. The specific methods related to specific research stages are identified and explained. Key terms used in this chapter are explained in Table 3.1 to avoid potential confusion and overlap.

Table 3.1 Key terms and their clarification

Key term	Interpretation in this thesis
Case study-developed theory	A theory developed from case study research that facilitates making sense of the complex relationships and associated phenomenon in the research. In this case study the developed theory is about the role of learning theories in educational practices in professional education programmes, namely PharmD programmes.
Learning theories	The conceptual frameworks which lead to the acquisition of knowledge, skills and attitudes, to achieve changes in behaviour, performance or potential, such as constructivism, social learning theories, humanism and others, as discussed in Section 2.3.
Grand theory	A metanarrative that is central to a specific area of study. It usually explains conceptual structures or social processes in an abstract manner, such as sociological theories, conflict or functionalism theories (Cohen, Manion, and Morrison, 2011).
Research conceptual framework	An important element in qualitative research that describes stages, participants and relations. It allows the researcher to assign variable concepts to relevant stages and contexts. In this case study the research conceptual framework is presented in Table 3.2 and Figures 3.1.a, 3.1.b and 3.1.c.

CoP framework	A theoretical framework developed in this research. It contains ideas and concepts that underline a CoP-based education system. It helps to develop an alignment between CoP theory and educational practices.
Theoretical propositions	Statements that reflect important theoretical issues and guide researchers to the appropriate source of evidence, which ensures that the case study research remains reasonable in its scope.

### 3.2. Development of the research topic

The development of the research topic and question was a complex process. As Section 3.11.2 indicates, the researcher kept a research diary to record the development of the research topic and procedures. The following paragraph is an extract from the researcher's diary about the development of the research topic.

*“The establishment of the PharmD programme was a significant part of my career and I was partly involved in this important initiative. Before starting my full time PhD, I was a lecturer and an Assistant Dean for Faculty and Student Affairs in the College of Pharmacy at Qatar University. As an educator who would like to contribute to the development of pharmacy education and profession in Qatar and as a PhD student, I was eager to understand student experiences in the PharmD programme, and other stakeholders' experiences. Being a strong believer in the significance of continuous quality improvement, because of my Masters degree background and research, I always felt that when great effort and time are invested in the design of a new initiative, an equal amount, or even more effort and time, should be spent to evaluate this initiative and make sure that it is yielding the expected experience.*

*“I will miss the way our faculty taught us in the college, Ms. Banan, when I join the PharmD programme. I am sure that my learning experience will be completely different to the BSc one”.*

*PharmD alumnus, BSc graduation ceremony, May, 2010*  
*This quote was from one of the BSc graduates in her graduation ceremony. After hearing this statement, I started to think about the word “learning”*

*and decided to make the learning experiences of students in the PharmD programme the focus of my PhD. I started my journey by looking at the design of the PharmD programmes, realising that the students spend the majority of their time at the practice sites, doing their rotations.*

*As a novice researcher, I started questioning the reason for designing a programme based on experiential learning. I started asking myself about the theory behind this decision, looked deeper into the design document and was surprised not to find a clear link with learning theories, as I expected. I therefore decided to look for this link in the literature and in other PharmD programmes. I exchanged emails with some pharmacy education scholars and asked them about the theory and its application in the pharmacy education field. Unfortunately, I didn't find a satisfying answer in the literature or in other programmes or from the pharmacy scholars. In fact, some scholars suggested that the area I am enquiring about is an interesting one for research.*

*Upon this initial investigation, it became apparent that further research is necessary in order to understand the theories underpinning the design of the PharmD programmes, which became my overarching research idea.”*

Diary, October 17<sup>th</sup>, 2013

### **3.3. Qualitative and quantitative research strategies**

Creswell (2013) suggested that qualitative research is usually used to explore a problem or issue which has variables that cannot be measured, and to gain a detailed understanding of an issue, by talking directly to the people involved. He added that qualitative research is conducted to understand the natural context or setting in which the issue takes place. Similarly, other authors have discussed the role of qualitative research as: the rich understanding and description of the investigated phenomena, contexts and events that explain associated patterns and variables. This understanding cannot be achieved with quantitative research because it explains phenomena in a discrete manner only (Bryman, 2015; Sofaer, 1999).

The use of qualitative methods in this research was deemed to be suitable for the research problem and the research questions (Silverman, 2013), which will help in describing and explaining the complex investigated phenomenon (Sofaer, 1999). The consolidated criteria for reporting qualitative research (COREQ) was used to report the major aspects of the research stages, features, methods, context, results and interpretation (Tong, Sainsbury and Craig, 2007).

In this research, the researcher aimed to examine the problem of the potential disconnect between learning theories and education practice in the design of PharmD programmes. This examination was facilitated by the acquisition of a detailed and complex understanding of different learning theories, and by talking directly to participants in a specific PharmD programme, the QU PharmD programme. The researcher's communication with participants in the QU PharmD programme, and with other key participants in the field of pharmacy education, facilitated understanding of the specific context in which the educational programme takes place, and selecting the most relevant learning theory. This understanding encouraged the development of a case study-developed theory about the significance of implementing learning theories in the design of professional education programmes, namely PharmD programmes.

### **3.4. Interpretative framework and philosophical assumptions**

#### **3.4.1. Background**

All research studies begin with the selection of a topic, an interpretative framework or research paradigm that guides the research, and a compatible research approach that is suitable for the research questions (Creswell, 2013). Babbie (2015) defined research paradigms as the frameworks for researcher understanding, which shape their perspectives of reality, observations, and reasoning. Creswell (2013) defined interpretative frameworks as the social science theories that structure the theoretical lenses of the qualitative research and shape different philosophical assumptions.

There are several qualitative research paradigms or interpretative frameworks that are ever-expanding, and thus different scholars categorise them differently. For example, Creswell (2013) categorised interpretative frameworks as positivism, social constructivism, transformative, postmodern, pragmatism frameworks, and feminist, critical, and disabilities theories. Cohen, Manion, and Morrison (2011) described these frameworks as research traditions and considered them the guiding principles of research, selected according to the research purpose. Cohen, Manion, and Morrison (2011) categorised research traditions into positivism or normative, interpretive, critical theory, complexity theory and feminist research. Bryman (2015) called the interpretative frameworks as social research strategies, and categorised them either as epistemological considerations, which include positivism, realism, and interpretivism; or ontological considerations, which include objectivism, and constructionism. Other scholars identified limited categories, for example Silverman (2013) suggested that there are two models for qualitative research, naturalism and constructionism.

Similarly, there are several ways to define, examine and classify the philosophical assumptions that underpin qualitative research paradigms. Philosophical assumptions are beliefs about ontology, epistemology, axiology and methodology that are folded within the interpretative frameworks or research paradigms used by the qualitative researcher. Ontological beliefs identify the nature of reality, epistemological beliefs explain how reality is known, axiological beliefs clarify the role of researcher values, and methodological beliefs explain approaches to inquiry (Creswell, 2013). These assumptions facilitate the understanding of the world, which is informed by our view, understanding and interpretation (Cohen, Manion and Morrison, 2011).

It is important to note that these philosophical assumptions are referred to in some literature as paradigms, epistemologies, ontologies, broadly conceived research methodologies and alternative knowledge claims. Bryman (2015) categorised philosophical assumptions as epistemological considerations and ontological considerations. Cohen, Manion and Morrison (2011) argued that ontological

assumptions guide epistemological assumptions, which in turn guide methodological considerations, including data collection and analysis methods.

For the purpose of this research, Creswell's (2013) definition and categorisation of interpretative frameworks and philosophical assumptions were generally adopted. The researcher believes that it is more effective to adopt a unified category to maintain the cohesiveness and consistency of research, rather than switching from one to another. Creswell's (2013) approach was adopted because it aligns with the researcher's understanding of qualitative research and provides clear explanations. Creswell (2013) also details various qualitative research approaches that are generally consistent with other literature, but are particularly directed towards research in social, human and health sciences, which is where this research belongs.

#### **3.4.2. Interpretative framework**

Social constructivism was selected in this research as the interpretative research framework. Social constructivism is based on examining the complex, variable, and subjective meanings of the world. This framework emphasises process and contexts, and considers the social and historical negotiation of meanings, while recognising the influence of researcher's values and background on the research process and findings interpretation Creswell (2013). Social constructivism's underlining philosophical assumptions are in alignment with those of the researcher, as will be explained in Section, 3.4.3.

A postpositivist framework was not chosen because this case study research assumes that multiple realities can be socially and culturally constructed between the researchers and researched, such as preceptors, students and others. Other frameworks such as transformative frameworks or Feminist, Critical and Disabilities theories were also not selected because the aim of this research was not improving society or examining marginalised groups or investigate social structure, freedom and control, and to change these struggles. Postmodern perspective was too not

selected for this research because it focuses on the class, race or gender of respondents, which are irrelative in this study. Finally, the pragmatism framework was not selected this research did not aim to offer practical solutions to the investigated problem. Rather, this case study examines the relationship between learning theories and practices, which represents a complex phenomenon of the world, without suggesting a definite solution.

### **3.4.3. Philosophical assumptions**

To develop the research questions and choose this study's approach, the researcher reviewed the research idea using different interpretative frameworks and philosophical assumptions. This review and selection of the philosophical assumptions that underpin the interpretative framework is important for several reasons.

Firstly, philosophical assumptions inform the choice of explicit theories that guide research. For example, social constructivism is an epistemology and a psychological theory of learning that explains knowledge and the meaning making processes. Social constructivism was further developed into social theories of learning, as explained in Section 2.3.7. In this study, the philosophical assumptions of social constructivism were selected because they are in alignment and appropriate for exploring constructivist and social theories of learning in this setting.

Secondly, philosophical assumptions are influenced by the researcher's background and experience, and are reinforced by the scholarly community to which she belongs. The researcher's previous administrative and teaching experience in the QU College of Pharmacy and concepts of teaching and learning and her Masters degree background facilitated her choice of social constructivism as a framework. The researcher believes that students learn when they engage in relevant contexts and lived experiences. Learning by situating the students in relevant settings seems to be the key basis for pharmacy education, which is again an important element of

social constructivism, as an interpretative framework and its related philosophical assumptions.

Lastly, the reviewers of this research should understand the researcher's philosophical assumptions and interpretative framework. The choice of social constructivism to understand the data interpretation, facilitates transparency, and resolves points of differences related to different interpretative frameworks.

Creswell's (2013) definition and categorisation of philosophical assumptions were adopted for the same reasons as those above. Social constructivism, selected as the interpretative framework of this research, comprises specific assumptions about reality (ontology), knowledge (epistemology), values (axiology) and approach to inquiry (methodology). To understand and apply research design, which is rooted in the perspectives of social constructivism, it is important to know the following underlying premises and philosophical assumptions:

### ***1. Ontological assumptions***

Social constructivists argue that there are multiple subjective and objective realities. These realities are constructed through social experiences and interactions, and are then developed into variable and multiple meanings. For the social constructivist, reality cannot be discovered because it does not exist prior to its social invention, and thus the researcher relies heavily on participant views of the research topic and is keen to report different perspectives (Creswell, 2013). The reality of the PharmD programme experience was thus different for each participant because of variable personal, educational and professional experiences, and unique beliefs and perspectives, and the researcher reported these different beliefs and perspectives, whether from students, preceptors, faculty, or designers.



## ***2. Epistemological assumptions***

For social constructivists, knowledge is also a human product, which is socially and culturally constructed between the researchers and researched, depending on the historical and cultural norms in their lives. Individuals create meaning through their experiences, interactions with each other and with the environment. Therefore, to identify the multiple realities, researchers negotiate their subjective meanings with those of the participants, and rely on participant quotes as evidence, and on interaction between individuals as other evidence, trying to be an insider to the research process (Creswell, 2013). Each participant in this study has developed individual meanings related to the PharmD programme. These meanings are facilitated by the participants' unique experiences in the relevant academic or practical setting, within their specific roles, whether students, faculty, preceptors, or designers, and therefore the researcher refers to participant quotes when presenting findings as evidence for variable subjective realities. The researcher also tried to act as an insider in the research process by carefully interpreting respondent quotes in relation to respondents' different experiences, and by analysing the programme's documents.

## ***3. Axiological assumptions***

Within a social constructivism interpretative framework, a researcher's values and background influence their research by affecting their interpretation of data and of the lived experiences of others (Creswell, 2013). In this study, therefore, the researcher attempted to position herself within the research, acknowledging the influence of the diverse values of participants, and reflecting upon her own values and experiences and their influence on participants. This reflection was facilitated by keeping a research diary, as will be explained in Section 3.11.2. Excerpts from this diary are included within this chapter at various points to help give meaning and clarification to research decisions made during the study.

#### ***4. Methodological assumptions***

Within the social constructivism interpretative framework, the researcher uses inductive and deductive reasoning and examines the topic within its particular context through appropriate methods, and describes the context in detail before making theoretical generalisations. When implementing qualitative approaches to inquiry, the researcher uses methods which are inductive or deductive in nature, asking participants open-ended questions, addressing the process of interaction, and seeking several methods of data collection, so that ideas from different data collection methods are synthesised (Creswell, 2013).

#### **3.5. Approach to inquiry: methodology- case study**

The selection of the approach to inquiry aims to achieve a state of methodological congruence, which means that aims, objectives, questions, and methods of the research are consistent to enable the production of a cohesive research design (Creswell, 2013).

Before selecting the case study approach, the other four approaches to qualitative research (narrative, phenomenology, grounded theory, and ethnography) explained by Creswell (2013) were deemed inappropriate for achieving the aim and objectives and answering the overarching “how” research question of this research, and ruled out. The aim of this research is to examine the role of learning theories in designing and implementing educational practices in the QU PharmD programme, and so narrative research was ruled out because it focuses on exploring the life story of individuals, which is not the aim of this research. Phenomenology was ruled out because it aims to understand the essence of the experience or lived phenomenon by studying several individuals who have shared experiences, and the experience of students or other stakeholders is not the main focus of this research. The interplay between learning theories and educational practices in the QU PharmD programme

is the focus of this research. Stakeholder experiences were deemed important in this research, along with other sources of data, such as documents. Grounded theory was ruled out because it aims to inductively develop a theory grounded in data from the field and the views of participants. In this research, inductive and deductive data analysis took place to frame a case study-developed theory and to make sense of the investigated phenomenon. Finally, ethnographic research was ruled out because it centres on examining the shared patterns of culture in a specific group, while the cultural characteristics of a group were not the main focus of this research.

*“After a lot of thinking, consultation and reading of all methodologies, and after reading Yin’s and stake’s books, I really liked the case study approach. I decided to follow the case study methodology, because it uses different data collection tools, describes learning theories in the PharmD programme, and answers my research questions.”*

Diary, December 20<sup>th</sup>, 2013

As the above extract from the researcher’s diary suggests, after considering the various approaches and analysing the research aims, objectives and research questions, a case study approach to inquiry was followed in this research. Case study research usually answers “how” and “why” questions, which are more explanatory and descriptive than exploratory (Yin, 2014). This ability of case study research to answer “how” and “why” research questions is its main comparative advantage over other research methods. In this research, the overarching research question is: How have learning theories influenced the design and implementation of the QU PharmD programme? This “how” research question was one of the reasons the researcher chose the case study approach.

Balbach (1999) argued that case study research is used to understand the implementation of a programme in detail, which aids in designing future programmes. Hence, the case study approach is also best for this research because it helps the researcher to develop an in-depth description and analysis of the role of

learning theories in education practice in the PharmD programme, by providing an in-depth understanding of the learning theories used in the QU PharmD programme.

Case study research is best used when examining a contemporary issue that the researcher cannot control or manipulate. In this research, the disconnect between learning theories and education practice in the PharmD programme is a contemporary issue, which was addressed by collecting data from people involved in the design, in delivery, and in participation in the programme, and by analysing current documents. Hence, the researcher in this case study cannot manipulate or control the behaviours or responses of participants, nor the data in the documents.

Finally, case study research can lead to the development of a case study-developed theory to make sense of complex relationships and associated phenomenon, which is particularly important in health science research due to its rigour (Baker, 2011). The relationship between learning theories and educational practices in PharmD programmes will be investigated in this research to understand the nature of the disconnect, which will facilitate the development of the role of learning theories in education programmes. According to all of the above justifications, a case study methodology and approach to inquiry was selected to answer the research questions and achieve the goals and objectives of the study.

### **3.6. Case study research definition and application**

Nisbet and Watt (1984) defined case study as a particular circumstance or situation that is designed to demonstrate a broader concept or idea. Another definition of case study is: “a qualitative approach in which the investigator explores a real life, contemporary bounded system (a case) or multiple bounded system (cases) over time through detailed data collection involving multiple sources of information, and reports a case description and case themes” (Creswell, 2013, p.97). Yin’s (2014) twofold definition of case study research is: “A case study is an empirical inquiry that:

- investigates a contemporary phenomenon (the “case”) in depth and within its real world context, especially when
- the boundaries between phenomenon and context may not be clearly evident.” (Yin, 2014, p.16)

Based on these definitions and reflecting on this study, it was decided to apply a case study approach considering the following issues and characteristics.

### ***Identified concreteness of the case***

Identifying a specific case is either at the concrete level (individual, organisation) or less concrete levels (relationship, decision, process). In this research, the case was identified at the less concrete level, rather than as a concrete entity: the relationship between learning theories and education practice in the QU PharmD programme.

### ***Purpose of case study research***

There are three purposes for conducting case study research, intrinsic, instrumental, and collective (Stake, 1995). Intrinsic case studies aim to investigate a unique situation, which is not the case in this research. A collective case study aims to investigate more than one case, which is not the intended aim in this research. Instrumental case study aims to gain an understanding of a particular or specific phenomenon, which is the secondary purpose, for the sake of gaining an insight into a bigger or more general issue or to refine a theory, which is the primary purpose (Baxter and Jack, 2008). In this research, the primary aim is to understand the role of learning theories in educational practices generally in educational programmes. This primary purpose was accomplished by investigating the role of learning theories in educational practices in a specific and particular context, which is the QU PharmD programme. Investigating the phenomenon in a particular context gives it its manifestation, which allow the refinement or development of a case study-developed theory about interplay between learning theories and educational

practices The developed theory from this research will be defined as a case study-developed theory to differentiate it from other kinds of theories (Table 3.1).

### ***Case number and boundaries***

It is important to determine whether the researcher should conduct a single case study to understand a phenomenon or a multiple case study, while noting that a multiple case study might dilute and reduce the depth of analysis, is expensive and time consuming (Baxter and Jack, 2008). A single case study was conducted in this research to examine the QU PharmD programme from a pedagogical perspective, bounded within the Qatar context and the full time PharmD programme. Examining the relationship between learning theories and educational practices in other programmes using a multiple case study approach was deemed unnecessary, and time- and resource-consuming, because in many aspects the QU PharmD programme emulated other PharmD programmes in the Middle East and North America. Therefore, a single case study with QU PharmD programme context was expected to represent the major elements of the relationship investigated.

### ***Rationale for single case study***

The rationale for conducting a single case study could be critical, unusual or extreme, common, revelatory or longitudinal (Yin, 2014). An unusual or extreme rationale is not applicable because the research is not investigating a case that deviates from theoretical norms, or the usual occurrence. Revelatory and longitudinal rationales are also excluded because the case does not aim to investigate a phenomenon that was previously inaccessible to inquiry, nor to study the same single case over a period of time, respectively. Finally, the common rationale was excluded because this research does not capture the circumstances of an everyday phenomenon. The rationale for conducting a single case study is the critical rationale. This means that a critical case for the theory or theoretical propositions is selected, because this particular case has a specific set of circumstances, within

which the propositions are believed to be true (Yin, 2014). The single case study will confirm, challenge, or extend the theoretical propositions and the case study-developed theory.

### ***Type of case study based on its application***

A case study can be either an explanatory case study, which explains the complex and causal links in real situations, or a descriptive case study, which describes an intervention or important topics within an intervention, or exploratory case studies, which explore the circumstances in which the intervention had no clear set of outcomes (Baxter and Jack, 2008). In this research, descriptive case study research was used to describe the relationship between learning theories and the PharmD programme by describing the disconnect between learning theories and educational practices using the CoP learning theory, without explaining the causal links.

### ***Triangulation of data***

Triangulation is the use of two or more methods of data collection. This use of several forms of data is important to gain an in-depth understanding of the case (Cohen, Manion and Morrison, 2011). In this research, data about the QU PharmD programme was collected from various sources, such as focus groups (FGs), interviews and documents.

### ***Approach to data analysis***

Investigating a single case study can be done either by analysing multiple units or elements within a case (embedded analysis), or by analysing an entire case as a comprehensive unit (holistic analysis). Embedded analysis facilitates a focus on the case study inquiry, and prevents shifts in the research design associated with holistic case studies (Yin, 2014). However, it is important that the researcher returns to a focus on the larger unit of analysis (the entire or the holistic case) after focusing on the subunits. In this research, an embedded analysis was used to explore the

disconnect between learning theories and practice, because the analysis was divided into several components of the CoP theory and the PharmD programme, curriculum, teaching strategies and assessment, rather than on the entire theory and entire programme. The analysis of the embedded units facilitates the understanding of issues associated with each component of the case. After analysing the embedded components, curriculum, teaching strategies and assessment, the discussion will be focused on the overall relationship between the learning theory (with its holistic components) and the PharmD programme (with its overall educational practices), in Sections 7.2.1-3, and 7.3. The decision to divide the educational framework into several components is explained in the following extract:

*“After several discussions with my local advisor, a Professor in the College of Education at QU, about what the education framework is composed of, we agreed that the educational framework should be composed of at least the three following sections: curriculum, instruction and assessment.”*

Diary, January 5<sup>th</sup>, 2014

### ***The overall meaning of the case study***

Case study research should be concluded by explaining its overall meaning. This could involve assertions (Stake, 1995), explanations, or a case study-developed theory (Yin, 2014). In this case study, a case study-developed theory about the significance of learning theories in educational practices in the PharmD programmes will be developed, and commented on in Section 7.3.



### **3.7. Critical discussion of case study research**

As with any other research approach, there are criticisms of case study research. It was important for the researcher to understand these criticisms, to decide whether the case study approach was the most appropriate for this study, and to take measures to reduce their impact.

A criticism of case study research is the inability to generalise from its findings and conclusions. Yin (2014) claimed that case study research could be generalised to theoretical propositions, (defined later in Section 3.8.2), but not to the general population. He added that this type of generalisation is analytical, which is different from the statistical generalisation produced by other research methods. This case study is not considered a sample; the research aim is to generalise a case study-developed theory related to the significance of learning theories in education practice, rather than to statistically verify the theory or conclusion.

An additional criticism about the case study approach is the potential lack of rigour. It has been associated with a lack of clear evidence of direct findings and conclusions, because systematic procedures are missing. Yin (2014) acknowledged this criticism and noted that a small number of texts, in addition to his own, are available to provide researchers with clear procedures to follow and to help them to avoid applying careless practices. In this research, the researcher utilised Yin's (2014) textbook as the primary source of procedures to be followed.

### **3.8. Case study research design**

Researchers need to follow a logical plan to move from research questions to research answers represented by conclusions, by collecting, analysing and interpreting relevant data (Yin, 2014). Generally, there are two key approaches to case study research, as defined by Stake (1995) and Yin (2014). Both explain

procedures to fully examine the investigated phenomenon, however, those procedures are quite different (Baxter and Jack, 2008). After a review of Yin (2014) and Stake (1995), it was decided to utilise Yin's (2014) approach and procedures to case study research because it provided a recent, comprehensive, detailed and step-by-step guide, which is easy to understand and apply by a novice researcher. In case study research, the research design is composed of the following components.

### **3.8.1. Unit of analysis - the “case”**

Composing the research questions and propositions facilitates identification of the case and its boundaries. Identifying the case's boundaries means making a clear distinction between the unit of analysis, the case, or the phenomenon, which is the immediate topic of the case study, and its context, which is external to the case (Baxter and Jack, 2008). Identifying the case boundaries is important to determine the scope of data analysis and differentiate between data related to the case and data related to the context (Yin, 2014). The case should be some real life phenomenon which gives the case some concrete manifestation, even if it was originally a less concrete phenomenon. This case study research is focused on the relationship between learning theories and the QU PharmD programme. The phenomenon is the “relationship” or “role”, which is abstract, rather than concrete, however, selecting a specific PharmD programme to be studied added a real life specification to the phenomenon, and clarified the exact unit of analysis, which is the QU PharmD programme. This phenomenon is bounded in the Qatari context and the full time PharmD programme.

### **3.8.2. Propositions**

Propositions are vital for case study research and are defined as: "statements derived from theories or from generalisations based on empirical data" (Nieswiadomy, 2011, p.90). Yin (2014) explained “Each proposition directs attention to something that should be examined within the scope of the study” (Yin, 2014, p.30). He added that

propositions reflect important theoretical issues and guide researchers to the appropriate source of evidence, which ensures that the study remains reasonable in its scope and facilitates analytical generalisation. The propositions usually emerge from a review of the literature, empirical data or personal experience (Baxter and Jack, 2008).

As will be described in detail in the conceptual framework and research stages in Section 3.10, Stage One of this research did not have theoretical propositions because it is an exploratory stage, and according to Yin (2014) exploratory case studies or stages have a specific purpose and criteria for judging the exploration, instead of propositions, however, stage one was instrumental in developing propositions for stage two. Propositions were used in Stages Two and Four of this case study. In Stage Two, propositions were developed based on findings from Stage One, and in Stage Four, more specific propositions were created, based on the CoP framework developed in Stage Three.

### **3.9. Theory development in case study research**

Case study research design aims to develop or refine a case study-developed theory of what is being studied, which involves the questions, propositions, unit of analysis, data analysis and interpretation strategies (Yin, 2014).

The developed or refined case study-developed theory is not one of the grand theories; rather it starts to develop prior to data collection, guides the initial design, strengthens the research findings and facilitates the conceptual analytical generalisation, which expands beyond the specific context. Through analytical generalisation, the case study-developed theory could be agreed, rejected or applied in interpreting the results of other research, or used in calling for further research (Yin, 2014). Case study-developed theory is different from the theory generated from grounded theory research, based on inductive data analysis.

In this research, the case study approach enabled the researcher to fully describe the QU PharmD programme in an attempt to explore the disconnect between learning theory and educational practice in the design and delivery of the programme, describe its implications, and then suggest ways to enhance the connection between learning theories and practice in the design of pharmacy programmes more generally. This research thus aims to develop a case study-developed theory about the role of learning theories in educational practices.

### **3.10. Conceptual framework and research stages**

Miles, Huberman and Saldaña (2014) suggest that a conceptual framework is an important element in qualitative research, which serves several purposes. First, it identifies the participants. Second, it describes stages and relations in the research. Third, it allows the researcher to assign variable concepts to relevant stages and contexts. The conceptual framework of this research is presented in Figures 3.1.a-c and in Table 3.2. Figures 3.1.a-c were developed by the researcher as part of this research, and were presented in different chapter in this thesis, as relevant. The research was conducted under the umbrella of a social constructivism interpretative framework, and the constructivist and the social theories of learning, while contextualising the case study to Qatar and QU. The research consisted of four stages, as follows.

Table 3.2 Stages of the research

<p><b>Stage One</b></p> <p>Purpose: Explore the perception and experiences of a range of stakeholders in the PharmD programme soon after initial development.</p> <p>The exploratory stage had several elements. First, FGs were conducted with the full time students in the PharmD programme, the faculty members and the preceptors. Also, a literature review was completed, focusing on the landscape of PharmD programmes in North America and in the Middle East region. Key internal documents in the programme and the personal experience of the researcher as a faculty member in the college were utilised. These data sources were analysed to identify major themes about issues in the programme. These themes facilitated the development of the first set of theoretical propositions to be examined in-depth in the second stage of this research.</p>
<p><b>Stage Two</b></p> <p>Purpose: Examine the potential disconnect between learning theories and practices in the QU PharmD programme.</p> <p>This stage examined the first set of theoretical propositions developed in Stage One, related to the design of the programme, by interviewing programme designers, pharmacy education scholars and the accreditation agency administrator. The researcher was able to explore the extent to which the programme is based on learning theories, best practice and the necessary contextualisation to QU and Qatar. This stage informed the development of the theoretical CoP framework, which was based on CoP learning theory.</p>
<p><b>Stage Three</b></p> <p>Purpose: Develop the CoP framework.</p> <p>In this stage, the researcher created a theoretical framework on curriculum, instruction and assessment, based on an extensive literature review of CoP theory. This analytical CoP framework was used to create the second set of theoretical propositions that guided the in-depth analysis of the PharmD programme.</p>
<p><b>Stage Four</b></p> <p>Purpose: Analyse the QU PharmD programme based on the developed CoP framework.</p>

The researcher carried out an in-depth analysis of the PharmD programme, utilising the developed CoP framework by examining the second set of propositions. This analysis was conducted through FGs and interviews with key stakeholders involved in the design and development of the PharmD, and through detailed document analysis. The in-depth analysis proposed a case study-developed theory in the form of recommendations about the role of learning theories in effective programme design and practice.

Figure 3.1.a. Stages of the research

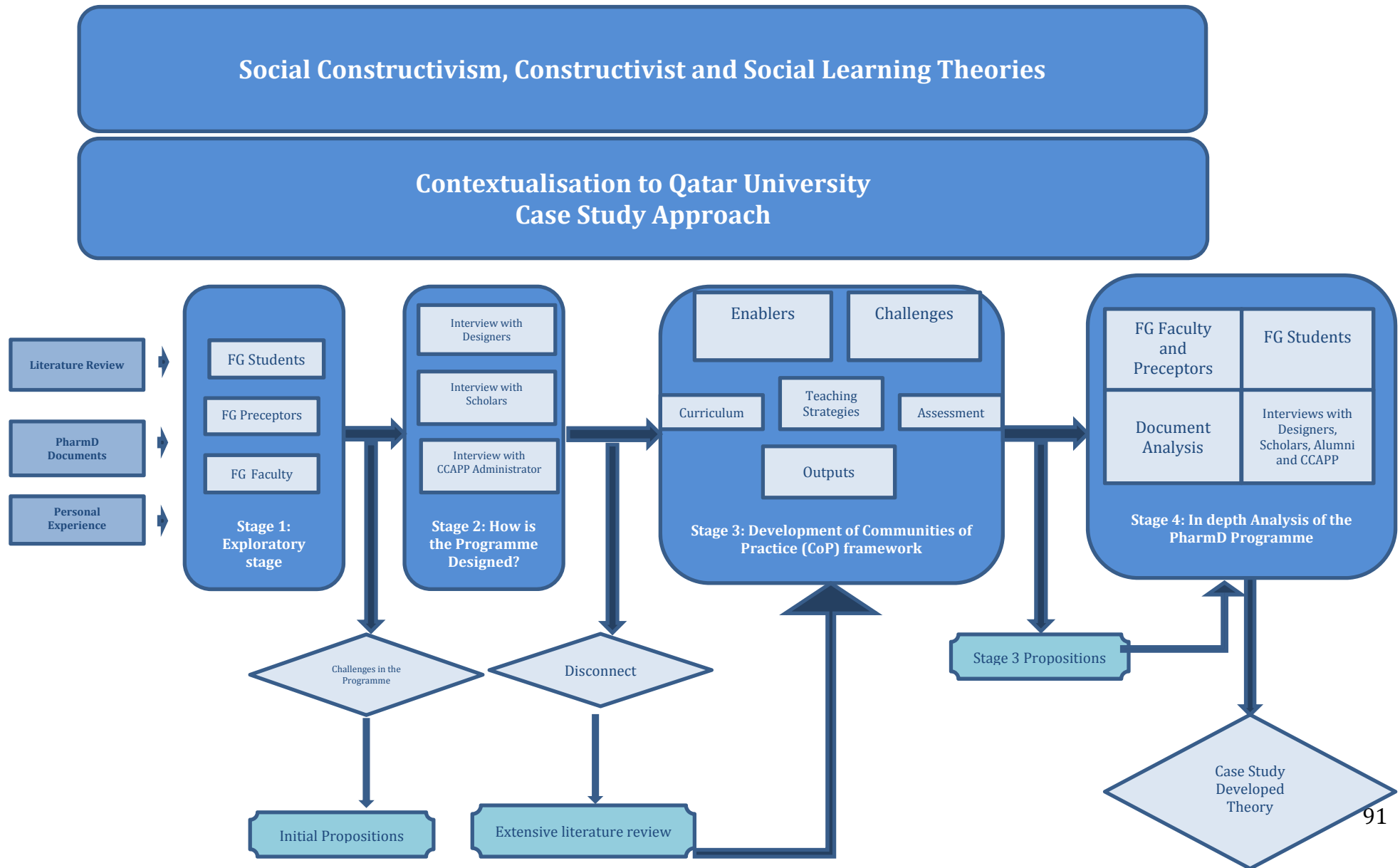


Figure 3.1.b. Stage Three

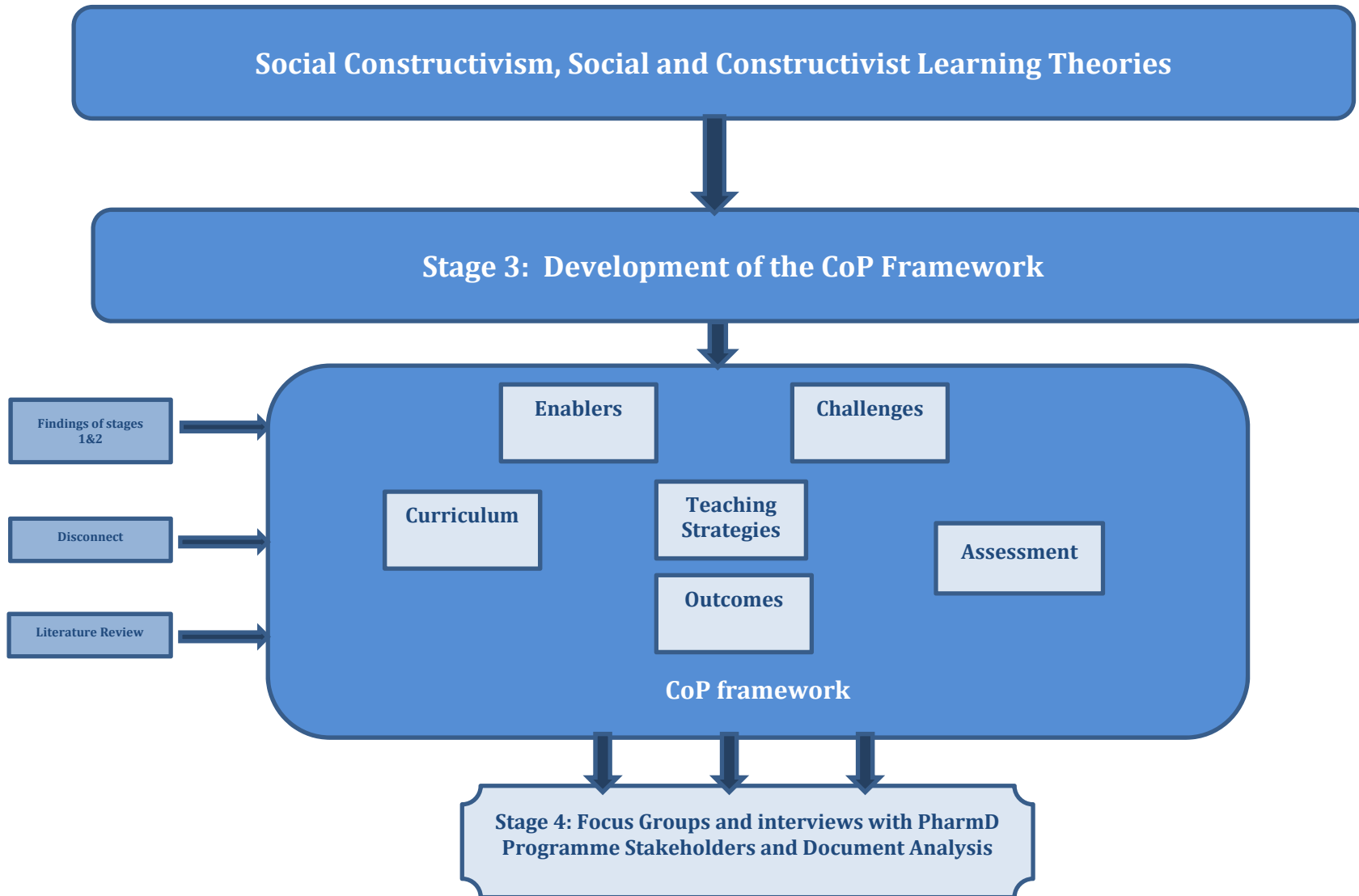
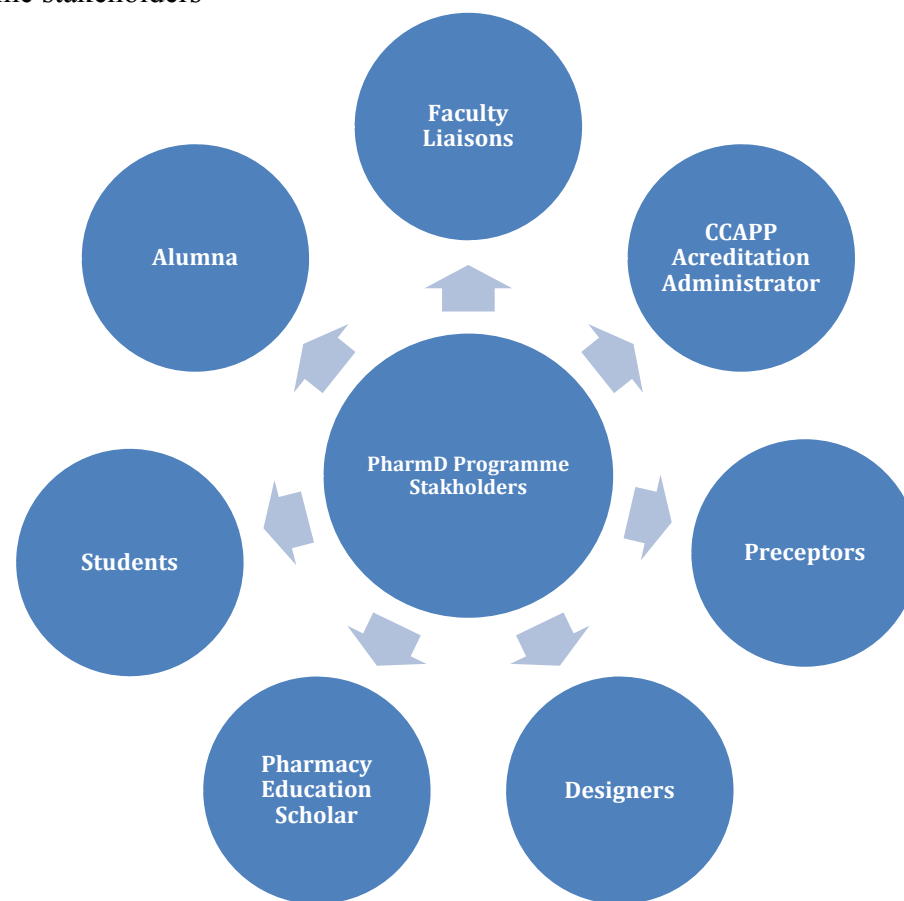




Figure 3.1.c. The PharmD programme stakeholders



### **3.11. Quality measures**

#### **3.11.1. Quality perspectives**

There are several perspectives from which to define validation and quality in qualitative research, explain its significance, and describe its terms and procedures for implementation. These qualitative validations use qualitative terms to distinguish them from quantitative research validation (Creswell, 2013). Qualitative research validation guides the researcher to conduct quality qualitative research, which requires rigorous data collection, handling and analysis.

A researcher should be transparent in recording the implementation of these perspectives, ensuring consistency between them and the philosophical assumptions of the research approach to inquiry (Lincoln and Guba, 1985). Consistency is expected between the aims, objectives and questions of the research, the research methodology, data collection and analysis methods, and the philosophical assumptions of the research.

In this case study, the researcher demonstrated in Section 3.6, how the use of a specific approach to enquiry, the case study, guided the design of the study and gave it coherence. Explanations and justifications of the methods used have been made throughout this study, and whenever possible these have been related to the underpinning philosophical assumptions.

Lincoln and Guba (1985) provide one perspective used to assess the quality of qualitative research. This follows a naturalistic research perspective and proposes a trustworthiness criterion that includes: credibility, conformability, transferability, and dependability. Lincoln and Guba (1985) see the criteria of trustworthiness as the naturalist's equivalent to internal and external validation, reliability and objectivity.

Lincoln and Guba's (1985) approach to trustworthiness in qualitative research was criticised by interpretive scholars when it was introduced as an objective and measurable approach to quality. Interpretive scholars felt that Lincoln and Guba's (1985) approach was subjective, because it is influenced by the reviewer's or reader's

construction of reality, which is influenced by their personal and cultural values. Using this approach, hence, does not necessarily lead to high quality research (Holt, 1991).

Other critiques argued that the trustworthiness criterion is an evaluation approach, which makes it a post hoc, rather than a constructive, approach, which focuses on the process of research conduction or the approach to enquiry, and therefore the rectification of reliability or validity problems encountered would be late because it would not modify the research process. Also, there is a clear contradiction between epistemological constructivism and the ontological realism, which assumes the existence of multiple realities, and certain aspects of Lincoln and Guba's (1985) work, such as the member checking, which aims to check reality interpretation. Not recognising this contradiction in philosophical assumptions could lead to broken philosophical approaches and a lack of rigour (Tobin and Begley, 2004).

Another approach to judging the quality of qualitative research, particularly case study research, was proposed by Yin (2014), and is based on the four tests commonly used to establish the quality of any empirical social research: construct validity, internal and external validity and reliability.

Understanding these criticisms is important to encourage the qualitative researcher to be clear about their philosophical assumptions, transparent, and considerable for other methods of ensuring research rigour during the research process (Tobin and Begley, 2004). In this case study, the researcher realised the criticism associated with Lincoln and Guba's (1985) trustworthiness criterion, and felt that the criticism regarding subjectivity could be applicable to other quality measures. However, realising this criticism kept the researcher aware of potential subjectivity, and more reflective. The researcher, also, understood the criticism associated with rigour in qualitative research, which is usually raised by quantitative researchers, including those who follow other paradigms. The rigour of this study is based on Lincoln and Guba's (1985) trustworthiness criteria, and enhanced by the four tests of social research quality (Yin, 2014), to ensure a comprehensive description of the study's rigour rather than solely depending on Lincoln and Guba's (1985) criterion.

## 1. Credibility

This criterion is similar to internal validity and construct validity in quantitative and social sciences research. Internal validity implies ensuring a causal relationship between leading and resulting conditions, and ensuring that inferences are correct. Construct validity implies identifying correct operational measures for the concepts being studied (Yin, 2014). Credibility measures facilitate establishing confidence in the 'truth' of the findings (Cohen and Crabtree, 2008). Lincoln and Guba (1985) suggested that credibility includes the activities that increase the likelihood that findings will be credible, such as a triangulation of data sources and data types, which allows a phenomenon to be explored from multiple perspectives. In this case study, this quality measure was attempted by the measures illustrated in Table 3.3.

Table 3.3 Credibility measures in this case study

<b>Credibility measure</b>	<b>Application</b>
Multiple sources of data	Multiple sources of data such as FGs, interviews and documents were utilised. Quotes and extracts from these sources were compared and contrasted. This use of multiple sources of data is also a tactic towards construct validity, and will be explained further in the dependability section.
Multiple respondent category	Participants in the FGs and interviews belonged to different categories of stakeholders to the gain widest views.
Peer review	Peer review of the data analysis and interpretation by the research PhD supervisors.
Member checking	The findings of the interviews and FGs in Stages Two and Four were shared with the respondents to confirm that they reflected their true perspectives. This strategy is a tactic for construct validity. Transcripts, themes and findings were sent by email to participants. The researcher requested respondents, via email, to check that transcripts and findings reflected their view. All interview respondents, and all FGs respondents indicated that they did not have comments or questions about the transcripts or the findings, and agreed with the data analysis and interpretation. However, one of the designers contributed comments about the interpretation and analysis of his quotes in Stage Four. These will be discussed in Section 7.2.3.
Proper data analysis strategies and techniques	Interpretation of the data is ensured to be correct, by following the proper data analysis strategies and techniques, for example, relying on theoretical propositions and explanation buildings, as described in Section 3.13.3. This is a tactic for internal validity.
Reflection recording	A research diary is maintained to facilitate the conduction of a reflexivity analysis of the researcher's own influence and biases in reading and interpreting data. The researcher's personal,

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professional, historical, and cultural experiences must have influenced the research. The researcher is a participant in the research, being a previous faculty member in the CPH, rather than an observer, and being a pharmacist, an educator of pharmacists and a strong believer in the role of learning theory in educational development. Also, as this research follows a social constructivism interpretative framework, the researcher's background and experiences influence the research process and data interpretations. The researcher used a research diary to record reflections, which could have influenced her interpretations, and discussed concepts and possible blind spots with the supervisory team. Section, 3.11.2 will explain the reflexivity components of this case study.

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## **2. Dependability**

This criterion is similar to reliability in quantitative research and social sciences research, where reliability means demonstrating that the operations of a study can be repeated with the same results, which relates to the consistency of findings. A dependability criterion supports the researcher's conclusion and demonstrates that the research findings are consistent and repeatable (Cohen and Crabtree, 2008).

Dependability is checked in a qualitative study by determining whether the researcher made mistakes in the conceptualisation of the study, data collection, interpretation and reporting of the results. The more consistent the researcher has been in this research process, the more dependable the results, and the more easily the research can be repeated (Krefting, 1991). In this case study, the dependability criterion was addressed by several measures, as illustrated in Table 3.4.

Table 3.4 Dependability measures in this case study

<b>Dependability measure</b>	<b>Application</b>
Full description	A full description of the methodology and research procedures is provided, as described in this chapter.
Case study database	A case study database is maintained, which is an "audit trail" comprised of all records pertaining to the study, so that they can be reviewed and checked to determine whether the researcher made mistakes in the conceptualisation of the study, data collection, interpretation and reporting of the results.
Peer review	Oversight and audit of the research process was conducted, in terms of a strong coherence between research questions, propositions, instrument design and structure, data analysis and interpretation

	(Tuckett, 2005), by the supervisory team, who are considered peer researchers. To facilitate data review by supervisors, a two-page Excel codebook was created in Stage Four, as shown in Appendix 4.3. The first page was for themes derived from propositions, with columns <i>for met</i> , <i>not met</i> , <i>explicit</i> and <i>implicit</i> . The second page was for themes emerging from inductive analysis. Both Excel sheets were shared with the research supervisors, who sent their comments on the appropriateness of the quotes and extracts for the coding schemes. These tables were used for comparing and contrasting data, selecting the best quotes and extracts, and guiding the reporting of findings.
Inter-coder reliability testing	An additional independent researcher was involved to conduct an inter-coder reliability testing. This was partially achieved by having the PhD supervisor coding, analysing, and interpreting data in the early stages, and selected elements of later stages of the research, to check and promote the rigour of the study. The PhD supervisory team were involved in discussing the collection, coding, analysis, and interpretation of data with the researcher.
Intra-coder reliability testing	Intra-coder reliability testing was conducted in the final cycle of data analysis in Stage Four of the research. Intra-coder reliability testing was achieved by coding the data for the first time, leaving it for about two weeks, and then recoding for the same data, which is independent of the first coding cycle, and then comparing the coding results. This intra-coder reliability testing was successful because the results of coding and recoding matched.
Data triangulation	More than one method is used to ensure that weakness in one data gathering method is compensated by another method. The use of multiple data collection methods facilitates describing the rich and complex of picture of human phenomenon by looking at several standpoints, because depending on one method may limit the researcher's view and interpretation of the investigated reality, which results in a lack of confidence (Cohen, Manion and Morrison, 2011). Lincoln and Guba (1985) suggest that triangulation is an excellent tool for conducting a check on data. Triangulation facilitates the dependability criterion and helps the research to avoid the "method boundedness" associated with the reliance of one method.

### 3. Confirmability

This criterion resembles the objectivity criterion in quantitative research, and in qualitative research. It addresses the issue of neutrality, interpretation and data confirmability. It aims to ensure that the respondent's perspectives, and not the researcher's biases, shape the findings, which suggests that the results could be confirmed or corroborated by other researchers. Audit strategy is the main technique for establishing confirmability. Audit strategy necessitates that the researcher records research activities over time, so that an external auditor can understand the evidence of decisions and can reach comparable conclusions within the same data and research

context (Krefting, 1991). This means that use of the audit trail aims to confirm the rigour of methods, interpretations and findings. In this case study, confirmability is achieved by the measures illustrated in Table 3.5.

Table 3.5 Confirmability measures in this case study

<b>Confirmability measure</b>	<b>Application</b>
Audit trail	An “audit trail” is provided, where all audiotapes of the FGs and individual interviews, original transcripts, and coding schemes are available. This audit trail is described by Yin (2014) as a case study database, which enhances reliability. To ensure the protection and security of information, the database is saved in the researcher’s password-protected laptop.
Research process oversight	Audit and oversight of the research process by the supervisory team who are considered peer researchers
Research methods description	The research methods were described comprehensively, in a way that can be followed by another researcher.
Multiple set of evidence	The majority of interpretations are supported by the triangulation of data sources, thus ensuring more than one set of evidence.
Reflexivity analysis	Maintaining a research diary to conduct a reflexivity analysis, as explained in the credibility section.

#### **4. Transferability**

External validity means defining the domains to which the study findings can be generalised (Yin, 2014). This criterion is similar to external validity in quantitative or social sciences research. According to Lincoln and Guba (1985), transferability refers to the degree to which study findings can be applied to other similar situations and context, and therefore rich and comprehensive descriptions of the research participants, the context within which the case study took place and credible interpretation should be provided, to give the reader the best possible picture of the phenomena, and to assess how transferable the results are to their settings, and how generalisable the knowledge is. A researcher should record and store information related to the research (Tuckett, 2005). The researcher attempted to meet this criterion in this case study by measures illustrated in Table 3.6.

Table 3.6 Transferability measures in this case study

<b>Transferability measure</b>	<b>Application</b>
Recording the research details	Details about the case study are provided in terms of describing the learning theories, particularly CoP (Chapters Two and Five), the QU PharmD programme and the status of pharmacy education in the state of Qatar (Chapters One and Two) and the “case” and its boundaries in Section 3.8 of this chapter.
Data interpretation and discussion presentation	A case study-developed theory is created based on data interpretation and discussion, as discussed in Section 7.3.
Member checking	A “ member checking”, was run, as described in the credibility section.
Research writing up	Information related to this case study was recorded in a detailed write-up of the research as a PhD thesis, and storing it in the researcher’s password-protected laptop.

### 3.11.2. Reflexivity

When interpreting and writing a qualitative research report or text, it is important to consider the author’s potential influence on the data, a reader’s reception of the report, and its effect on research participants (Creswell, 2013), and therefore the researcher writing up the research should employ reflexivity techniques.

Reflexivity involves disclosing and assessing the influences and biases that researchers bring to the qualitative research process, interpretation and writing. This influence can be due to one or more factors, ranging from the researcher’s gender, class, cultural, social, political and personal history, to their insights and experiences. This background means that the researcher plays dual roles when engaged in qualitative research, as observer and participant, and therefore researchers need to be open about their influences, and position themselves carefully in the interpretation and writing stages (Yin, 2014).

When conducting research, a researcher could reflect on their influence on the research by maintaining a research diary. Diaries usually contain three types of entries: daily schedules and logistics, methods and their justifications, and the thoughts, perceptions and ideas generated by contact with participants and while interpreting data. Writing down these reflections facilitates the awareness of biases,



which ultimately helps to positively develop the data collection or analysis methods (Krefting, 1991; Lincoln and Guba, 1985).

When writing the qualitative research report, reflexivity involves describing the researcher's experience with the phenomenon under study, and then explaining how this experience has influenced the researcher's interpretation of the data collection, analysis and interpretation of the phenomenon (Creswell, 2013). In this case study, the researcher attempted reflexivity through conducting measures described in Table 3.7.

Table 3.7 Reflexivity measures in this case study

<b>Reflexivity measure</b>	<b>Application</b>
Research diary	A research diary is maintained: The diary aimed to develop reflexivity and to foster a critical approach to the research. It helped the researcher to keep track of the research process and examine the design and methods of the case study. The diary described the research process, major decisions, and problems during the research. It contained descriptions of the researcher's feelings and thoughts during data collection and analysis, and dominating hypotheses that influenced data interpretation. Selected diary extracts can be found in Appendix 5.
Description of the researcher's experience	The researcher's experience with the "case" being explored is described through her previous study, work experience and personal interest, as at the beginning of the methodology chapter and in several diary extracts. For example, her strong belief in the significance of continuous quality improvement, because of her Master's degree background and research.
Researcher interpretation description	Explaining how the researcher's experience and interest influenced her interpretation of data, findings and conclusions, as in Section 7.2.3. For example, the judgement regarding the implicitly and partially evident elements category in the analysis of QU PharmD programme required the researcher's interpretation of different perspectives about the evidence of implementation. This interpretation was influenced by her experience in the pharmacy education and by her strong belief of the importance of learning theories.

### **3.12. Ethical considerations**

Stages One and Two of this research received ethical approval from the Ethical Review Board (ERB) at QU and was subject to ethical review by the University of Bath. Ethical approval from QU was renewable annually for the academic years 2011-2012 and 2012-2013. In 2014, the research was subject to an extensive ethical review from University of Bath. A peer review and audit was conducted resulting in the completing and signing of the “Ethical Implications of Research Activity” (EIRA) form by an independent researcher, who is external to the project, (from the University of Bath). This was followed by ethical approval being obtained from the Institutional Review Board (IRB) at QU for the remaining period of the study. The ethical (EIRA) form and the QU ethical approvals are in Appendices 1.1-5. The key ethical issues raised from this case study are presented and discussed below, to illustrate how any effects of these issues were addressed.

#### **3.12.1. Informed consent and participant information leaflet (PIL)**

Sim (1986, p.584) defined informed consent as “the voluntary and revocable agreement of a competent individual to participate in a therapeutic or research procedure, based on an adequate understanding of its nature, purpose, and implications”. The informed consent process should provide sufficient information, ensure the understanding of this information, confirm the ability of participants to make a rational decision and secure voluntariness (Sim, 1986).

In this case study, an email was sent to all the research participants, informing them of the study and inviting them to participate. The email included the PIL and the consent forms (as an example of what the potential participant should expect). However, the forms were administered, signed and collected at the data collection event. The PIL explained the purpose of the research, how information would be collected and stored, and possible harms and risks, and detailed the rights of the participants should they wish to take part in the study. Participants were encouraged to contact the researcher or her supervisors to ask questions or arrange for an interview. The PIL also contained information about the participant’s right to withdraw from the study at any point without prejudice and at no penalty, and that at this point they were offered the choice

to withdraw previously collected data or maintain it. All participants would consent each time they provided data for the study. Examples of the PIL and consent form can be found in Appendices 1.6-7. Both were written in plain English and followed the guidelines recommended by the University of Bath and QU ethics committees and regulations.

### **3.12.2. Anonymity and confidentiality**

It is important to protect the privacy and confidentiality of participants in case study research, so that they are not vulnerable to any undesirable circumstances or risk (Yin, 2014). Yin (2014) discussed the anonymity of research at two levels: the level of the entire case and that of individuals within a case, as follows:

- On some occasions, it is desirable to disclose the identities of both the case and individuals, within the conditions of protecting such individuals.
- On other occasions, maintaining the anonymity of individuals within the case is sufficient, while leaving the case itself identifiable.
- On other occasions, the individuals are named as part of a long list, without assigning specific views to any individual, however, some participants might be identifiable if the reader would anticipate their views.

In this case study, confidentiality was maintained by using a code system to identify research participants during data collection analysis and storage, and during the writing up of the research. For security purposes, the key to the code system was stored in a separate location. Audio files were transferred from a digital voice recorder to a password-protected personal laptop. The data transcribed from each interview, and all documents related to this research, were also stored on a password-protected laptop with the intention of keeping the data for a five year period, in accordance with University of Bath requirements, to maintain the confidentiality of data. The researcher used electronic versions of research documents, however, in cases where hard copies were printed out they were stored in a locked cabinet owned by the researcher. Finally, the external researcher who conducted the FGs with students and faculty, as will be discussed in Sections 3.12.3 and 3.13.6, agreed to maintain confidentiality and signed a confidentiality agreement, as illustrated in Appendix 1.10.

The general character of the case was disclosed in this research, which means that the case, the phenomenon and context were clearly described and identified. The anonymity of participants was maintained, which means that the names of participants were not disclosed, however, their participation categories were identified and disclosed when writing up the research findings, by indicating whether a particular perspective or a quote belongs to a preceptor, student, or a CCAPP administrator. It is important to note, however, that in some cases participants were identifiable due to a combination of factors, such as through their quotes, perspective or role. Participants were advised in the consent forms that they were likely to be identifiable, by the following sentence in the consent form, illustrated in Appendix 1.6: 'If I am identifiable because of the nature of my professional role, I will be sent the transcript and data analysis summary of my interview to check and verify prior to its inclusion in this study.'□However, given the nature of this case study, the risk of harm from such 'on the record' accounts was minimal.

In this study, the member checking approach was implemented for all interview respondents in Stages Two and Four (including those being potentially identifiable because of their perspectives). All participants were sent the transcripts and analysis of their interviews and invited to comment on them. Also, all focus group respondents in Stage Four were sent the transcripts and analysis of their focus groups and invited to comment on them. All interview respondents and all focus group respondents indicated that they did not have comments about the transcripts or the findings, and agreed with the data analysis and interpretation. Though, one of the designers gave some comments about the interpretation which were considered in subsequent interpretation cycles of the findings, as will be discussed in Section 7.2.3. Tables 3.12 and 3.13 indicate the number of focus group respondents who responded back to the member checking approach.

### **3.12.3. Power relations in qualitative research settings**

In qualitative research, the researcher is seen as a participant and a collaborator in the research process (Creswell, 2013), and therefore the perceived asymmetries of power between researchers and participants should be recognised, identified and reduced by the researcher. The risk of a power imbalance can be reduced by building trust with

participants, avoiding leading questions and rewarding them for their participation, which facilitates reciprocity between both parties (Creswell, 2013).

Karnieli-Miller, Strier and Pessach (2009) argue that in qualitative research the power imbalance is associated with interaction between researcher and participants, where participants have the knowledge and experience and the researchers need to obtain this knowledge, and information about the experiences. This interaction is involved in recruiting participants, and collecting, analysing, interpreting and validating data. The following section will explain the measures undertaken in this case study to reduce the power imbalance associated with the interactions at each stage of the research.

### ***Participant recruitment***

Participants were given the opportunity to decide to take part in the study once they had received relevant information, as well as to withdraw from the study, as explained in Section 3.12.1. This measure was expected to offset the potential power imbalances relating to participant recruitment.

### ***Data collection***

The researcher recognised that previous interactions with the students and faculty as a faculty member might influence their willingness to fully disclose their feelings on the topics of the research. Measures illustrated in Table 3.8 were undertaken to reduce the power imbalance in data collection.

Table 3.8 Power imbalance reduction measures in data collection

<b>Power imbalance reduction measures in data collection</b>	<b>Application</b>
External researcher	The FGs with the faculty and students in Stage Four were conducted by an external researcher to ensure that participants did not feel that divulging their thoughts to a person who was known to them could be seen as disloyal or otherwise. However, the researcher conducted interviews and FGs with other participants

	because she either did not have a working relationship with them, or because this relationship was not believed to affect the power distribution. Also, by collecting the data from some respondent categories, the researcher could be immersed in these data and exposed to the vital data collection experience.
Participants reassurance	All participants were informed during data collection sessions that the researcher was dealing with them in this setting as a PhD researcher and not as a previous faculty member; their responses would be treated as confidential and anonymous, and, crucially, would not affect the grading of students or the relationship between the participants and the college.
Researcher professional status	The researcher's status changed in the early stages of this research to that of full-time student and a leave of absence from work was taken, which reduced the probability of any influence on the research.
Gatekeeping	The PharmD director acted as intermediary and gatekeeper between the researcher and participants.
Communication opportunity with research supervisors or gatekeeper	The consent form signed by participants contained contact details for the researcher's PhD supervisors and for the research gatekeeper, so that students could communicate directly with them if they had any concerns about power relations in the study or about the conduct of the research.

### *Data analysis and interpretation*

Karnieli-Miller, Strier and Pessach (2009) suggested that a researcher has complete power over the data analysis and interpretation of data. Measures illustrated in Table 3.9 were undertaken to reduce the power imbalance in data analysis and interpretation. These measures were expected to outweigh the control and power imbalances in this phase of the research process.

Table 3.9 Power imbalance reduction measures in data analysis and interpretation

<b>Power imbalance reduction measures in data analysis and interpretation</b>	<b>Application</b>
Member checking	A member checking process was conducted to validate the findings and ensure that quality research took place. Member checking involved sharing transcripts, interpretations and findings with participants, as explained in Section 3.11.1.
Peer review	A peer review process was conducted by the PhD supervisor for different phases of the research, as indicated in Section 3.11.1.

### 3.13. Data collection

#### 3.13.1. Data sources

Case study research is characterised by the use of several sources of data to ensure data triangulation, as discussed in Section 3.11.1. This case study uses three types of data sources: documents, individual interviews, and FGs, to gain understanding, ensure completeness, and confirm findings. Each of the three data sources and collection method are presented and discussed in detail in the following sections. Table 3.10 indicates the type of data sources used in each stage.

Table 3.10 Data sources in different research stages

Stage	Data collection sources
Stage One	Focus group for students Focus group for faculty Focus group for preceptors Preliminary documentary analysis
Stage Two	Interviews with PharmD designers Interview with pharmacy education scholar Interview with CCAPP accreditation administrator
Stage Three	Extensive literature review to develop CoP framework
Stage Four	Focus group for students Focus group for faculty Focus group for preceptors Interview with pharmacy education scholar Interview with CCAPP accreditation administrator Interviews with PharmD designers Interview with PharmD alumnus Documentary analysis

##### 3.13.1.1. Documents:

Documents are important to case study research (Stake, 1995; Yin, 2014). There are several advantages of using documents as data sources. Documents strengthen the argument developed from other data sources, and provide clarification of concepts that are ambiguous in interviews and FGs. Documents also offer perspectives that could lead to further research, find contradictory evidence, contain additional details, and cover a long span of time (Yin, 2014). Documents can take several forms, such as letters, agendas, administrative documents, formal evaluations and news articles that

appear in mass media. It is thus important to conduct systematic searches for documents relevant to the research topic to ensure that key documents are not omitted due to biased selectivity. Documents often originally have different objectives and target audiences than those of the researcher, and researchers should therefore anticipate reporting bias and mitigated truth in the collected documents (Cohen, Manion and Morrison, 2011). The researcher in this case study combined and contrasted data from this source with other sources such as FGs and interviews, which facilitate the investigation of the phenomenon in depth, and the elimination of this bias, as explained in Section 3.14.3.

In this study, all key administrative documents that describe the PharmD programme and its development were analysed. The comprehensive document review and analysis comprised:

- Tracking the development and changes that took place in the PharmD programme since its inception by looking at older and recent documents.
- Examining other documents that influenced the design and implementation of the PharmD programme from policy, competence and learning outcome perspectives.

In Stage One of this case study, only two key documents from the PharmD programme were reviewed, because the purpose of Stage One was exploratory and the review of documents was preliminary, to examine the programme's design and investigate any potentially explicit link to learning theories. In Stage Four, a more in-depth and comprehensive document analysis was completed, to analyse the developed CoP framework from the specific written perspectives of documents. Permission to use internal unpublished documents in this research was granted by the College of Pharmacy administration. The documents analysed are presented in Table 3.11, with the name of the document, date, source, function, code and relevant research stage.



Table 3.11 Documents analysed and relevant research stage

Documents					
Name	Date	Source	Function	Code	Stage
CCAPP accreditation standards, addendum for the post-BSc PharmD programmes	2006	CCAPP website	Enumerate and explain the old CCAPP standards for the post-BSc PharmD programmes	CCAPP-old-D	1, 4
College of Pharmacy proposal document	2007	College archive	Request the development of CPH at QU to host the BSc and PharmD programmes	Proposal-D	4
Educational Outcomes for First Professional Degree Programmes in Pharmacy	2010	Association of Faculties of Pharmacy of Canada (AFPC)	Enumerate and describe entry-to-practice educational outcomes for both BSc and PharmD	Outcomes-D	4
Design document for the PharmD programme	2010	College archive	Describe the design and study plan for the PharmD programme	Design-D	1,4
Entry to practice competencies for Qatar	2011	College website	Describe entry-to-practice competencies in Qatar, adopted from Canadian NAPRA competencies	Competencies-D	4
CCAPP accreditation preparation document by QU PharmD programme	2012	College archive	Respond to all old CCAPP standards in terms of implementation, in preparation for accreditation	Preparation-D	4
The CCAPP new accreditation standards document for entry-to-practice PharmD programmes	2012	CCAPP website	Enumerate and explain the new CCAPP standards for the entry-to-practice PharmD programmes	CCAPP-new-D	4
Self-assessment of the PharmD programme document	2015	College archive	Self-assessment submitted for APR at QU	Self-study-D	4

### **3.13.1.2. Individual interviews**

Semi-structured individual interviews are one of the most significant sources of case study evidence (Yin, 2014). These are guided conversations, with a fluid stream, which focus on both following the line of inquiry suggested in the topic guide and asking friendly conversational questions in an unbiased manner (Yin, 2014). Semi-structured interviews: “are guided, focused, and open-ended communication events that are co-created by the investigator and interviewee(s). The questions, probes, and prompts are written in the form of a flexible interview guide” (Crabtree and Miller, 1999, p.19).

The interview as a method of data collection has its advantages and disadvantages. Advantages include focusing on the targeted case study topic (Yin, 2014). Interviews allow clarifications and elaborations from interviewees, to discover new interpretations of the phenomenon, which represent multiple personal views, expressed through the narratives, and told stories (Stake, 1995). Conducting a one-to-one interview enables the collection of data, which would otherwise not be witnessed, such as verbal, non-verbal, spoken and heard communications (Cohen, Manion, and Morrison, 2011).

Disadvantages of interviews include the extensive time required to conduct and transcribe them, and inconvenience for the interviewee as a result of the interviewer’s control of the conversation. Other disadvantages are predominantly about biases, which could be related to the difficulty of anonymity, discussed in Section 3.12.2, or poor construction of questions (Cohen, Manion, and Morrison, 2011). To avoid the poor construction bias in this case study, the topic guides were peer reviewed and discussed with the PhD supervisor, and were piloted with a PharmD alumnus. The alumnus was asked to provide feedback about the questions of the interview, and this feedback was considered when refining specific questions which were considered ambiguous, and the refined questions were used in the other interviews and FGs.

Reflexivity bias is an important disadvantage of interviews. Reflexivity bias means that the perspectives of the researcher may influence the respondent’s responses and similarly, those of the respondents may subconsciously influence the researcher’s line

of inquiry (Yin, 2014). The reason for this disadvantage is the respondent's wish to satisfy the researcher, rather than providing a truthful response. To avoid this disadvantage in this research, the respondents were reminded that there was no right or wrong answer to the question. The supervisors, through recordings and transcripts, observed the conduct of the interviews, so that they alert the researcher if this reflexivity bias took place. Finally, the pilot interview with the alumnus aimed to assess researcher reflexivity bias. This pilot interview suggested that the researcher provided a detailed description and information about the CoP learning theory and framework, which influenced the alumnus responses to the interview questions. After recognising this bias, it was decided to avoid the provision of unnecessary information to other respondents. Reflexivity bias is shown in the following extract:

*“When I first piloted the topic guide with an alumnus, I explained a lot about the learning theories, learning in and from practice, and the CoP theory, which influenced her response to the first question about her knowledge of CoP. The external researcher will not be able to provide this amount of background, so I decided to reduce the amount of explanation I give about the theory in future sessions to ensure a more consistent data collection between myself and the external researcher.”*

Diary, May 2<sup>nd</sup>, 2015

It is important to note that some interviews were conducted via Skype because the respondents were not in the same country as the researcher. This virtual interviewing in asynchronous environments has the disadvantage of the increased challenge of establishing rapport between the interviewer and interviewee, as argued by Fontana and Frey (2005). However, recent research argues that interviewing geographically-dispersed respondents through recorded interactions such as Skype imitates face-to-face interactions, and its benefits strongly outweigh its weaknesses, particularly in unstructured or semi-structured interviews (Sullivan, 2012).

In this research, after considering the above advantages and disadvantages, semi-structured interviews were seen as a useful data collection tool. Semi-structured interviews provided the opportunity to collect information, and resolve conflicting information in the literature, documents and real practice, by asking respondents

about any apparent conflict. Semi-structured interviews were also used because the researcher wanted to make a deep and thoughtful investigation of the answers provided, which were easier to obtain on a one-to-one basis. There were some differences between the topic guides for different interviews, depending on the interviewee and the focus of the interview, and between the topic guides for different FGs, depending on the participants of these FGs, whether students, or faculty or preceptors. These variations allowed different views to be expressed and explored. Some questions in the topic guides were common across interviews and FGs to understand the phenomenon investigated and to combine and contrast variable perspectives. For example, the semi-structured interviews with the PharmD designers focused on the design of the QU PharmD programme, specifically; while the semi-structured interviews with the pharmacy education scholars and the CCAPP administrator focused on the PharmD in general, rather than that of QU.

Table 3.12 describes the interviews that took place: when and where they were conducted, who the interviewee was, who the interviewer was, the method of conduct and the outcome of the member checking approach.

Table 3.12 Interview schedule

<b>Interview</b>	<b>Stage</b>	<b>Conduction method</b>	<b>Response to member checking</b>
Interview with PharmD designer 1	Two	Skype	Yes
Interview with PharmD designer 2	Two	Face to face	Yes
Interview with pharmacy education scholar	Two	Face to face	Yes
Interview with CCAPP administrator	Two	Skype	Yes
Interview with PharmD designer 1	Four	Skype	Yes
Interview with PharmD designer 2	Four	Skype	Yes
Interview with pharmacy education scholar	Four	Skype	Yes
Interview with CCAPP administrator	Four	Skype	Yes
Interview with PharmD alumnus	Four	Face to face	Yes

### **3.13.1.3. Focus groups**

Powell and Single (1996, p.499) define a FG as: “A group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research”. Morgan (1997, p.6) defines a FG as “a

research technique that collects data through group interaction on a topic determined by the researcher. In essence, it is the researcher's interest that provides the focus, whereas the data themselves come from the group interaction". Gibbs (2012, p.186) definition is: "Focus groups and group interviews are methods often used synonymously to mean an organised discussion with a selected group of individuals to gain collective view about a research topic". FGs are particularly useful when participants are similar in their background and experience and co-operate with each other, which yields a complex discussion. It is the researcher's responsibility, however, to recruit participants, moderate the discussion and ultimately garner the views of each person in the group (Creswell, 2013).

One advantage of FGs is participation from people who might be hesitant to be interviewed alone. FGs help individuals to share their insights regarding the phenomenon being explored, because interactions in FGs produce data that would not be gathered without the interactions of the group members (Morgan, 1997). FGs facilitate the formation of consensus, sharing of experiences, and reconsideration of views through interactions (Myers, 2004).

There are several disadvantages to FGs. Sometimes it is difficult for the researcher to clearly identify the individual message of a specific participant in these interactions (Gibbs, 2012). Also, some members might be uncomfortable and not confident about sharing their views or experiences with others (Polit and Beck, 2014), or some respondents might dominate a group, wanting to influence the perspectives of others, which can lead to insufficient discussion (Krueger and Casey, 2009). Furthermore, some respondents in FGs might make up answers instead of telling the truth. This can happen either because they lack the knowledge or experience required to discuss the issue in question, or because they want to appear thoughtful and reflective experts on the specific issue (Krueger and Casey, 2009). Finally, it is not possible to maintain anonymity and confidentiality among the FG participants, because they are sharing perspectives in front of each other (Gibbs, 2012).

While acknowledging these disadvantages of FGs, the researcher took some steps to reduce their impact, such as enabling a comfortable discussion environment, encouraging all respondents to present their perspectives, confirming that there is no

right or wrong answer, and refocusing the conversation if necessary. Table 3.13 clarifies the FGs that took place, the stage at which they were conducted, the respondent categories, the facilitator of the FG, and the outcome of the member checking approach.

Table 3.13 Focus group schedule

<b>Focus group</b>	<b>Stage</b>	<b>Facilitator</b>	<b>Response to member checking</b>
Focus group with students	One	Researcher	Not done
Focus group with preceptors	One	Researcher	Not done
Focus group with faculty	One	Researcher	Not done
Focus group with students	Four	External researcher	Yes (all)
Focus group with faculty	Four	External researcher	Yes (all)
Focus group with preceptors	Four	Researcher	Yes (all)

### **3.13.2. Access to data collection**

It is important that researchers gain access to the site and participants when collecting data for qualitative research. This involves obtaining ethical approval from the research board, and finding a gatekeeper who can facilitate access to documents, participants and the research site (Creswell, 2013). Finding the gatekeeper, the PharmD programme director, and obtaining ethical approval were discussed in Section 3.12.

### **3.13.3. Selection of focus group and interview respondents**

Purposeful sampling means making four major decisions regarding data collection. These decisions are about the criteria for selecting participants, the sampling strategy used with these participants, the size of sample and the site used for conducting the interviews and the FGs.

The first decision in purposeful sampling is determining a criterion for selecting participants. In this case study, participant choice was based on knowledge of the context (PharmD programme) and the purpose of the study (examining the PharmD programme).

The second decision in purposeful sampling is the sampling strategy. There are several sampling strategies in qualitative research, but in case study research, it is advisable to use a maximum variation sampling strategy (Creswell, 2013). Maximum variation sampling involves determining criteria for differentiating and varying the selected participants, to fully describe different perspectives and maximise the opportunity for interesting findings (Creswell, 2013). In this case study, two sampling strategies were used. The first is the maximum variation sampling strategy, represented by various key PharmD programme stakeholders, who can provide different perspectives based on their varying experiences. The second is the key informant selection sampling strategy. Baxter and Jack (2008) explain that key informants are individuals who have special knowledge or expertise and are willing to share this knowledge and expertise, which is usually based on access to experiences not available to the researcher. There are three criteria for selecting key informants. Informants should be: 1) knowledgeable about the issue being studied, including its culture; 2) willing to talk; 3) representative of a range of points of view (Baxter and Jack, 2008). In this research, the key informants who participated in FGs were students, faculty and preceptors because of their personal experience with the QU PharmD programme. Two PharmD programme designers, an internationally renowned pharmacy education scholar, and a CCAPP administrator, were selected for interviews in Stages Two and Four because of their experience in designing and evaluating pharmacy programmes. A PharmD alumnus was selected for a pilot interview in Stage Four because of her previous experience in the PharmD programme as a student, and currently, as a preceptor.

The third decision in purposeful sampling is determining the size of the sample. All full time PharmD students, all preceptors, all faculty liaisons, two designers, one alumnus, one CAAPP agent and one pharmacy education scholar were invited to participate in this case study. It is important to note that not all those invited accepted the invitation to participate in this research. In some cases, the number of recruited participants is less than the number of invited participants, as indicated in Table 3.14. The recruitment of preceptors for FGs was challenging and the number of recruited preceptors was much lower than those invited. However, in Stage Four the researcher conducted a preceptor FG at the hospital to encourage their attendance. The recruited

preceptors, although fewer than those invited, represented almost all practice sites where students undertake their practical placements.

The last decision in purposeful sampling is defining the site of the case study. FGs with faculty and students, and interviews with alumnus, took place in QU. Some preceptor FGs were conducted in QU, others at the hospital to increase attendance. The interviews with the designers and scholar were either in QU or via Skype, as mentioned before, and interviews with the CCAPP agent were via Skype.

Table 3.14 Recruitment of respondents

<b>Respondent category</b>	<b>Research stage</b>	<b>Invited participants</b>	<b>Recruited participants</b>
Faculty FG 1	1	8	8
Preceptor FG1	1	20	3
Preceptor FG2	1	20	5
Student FG 1	1	9	9
Student FG 2	1	8	7
Student FG 3	1	8	8
Faculty FG	4	7	6
Preceptor FG	4	30	7
Student FG	4	4	4
Alumnus interview	4	1	1
Designer interviews	2, 4	2	2
Pharmacy education scholar interview	2, 4	1	1
CCAPP administrator interview	2, 4	1	1

#### 3.13.4. Consent forms and PIL

Research participants were contacted by email before the FGs or interviews to invite them to participate in the research, and provide them with the PIL and consent forms, which they would later be requested to sign if they were willing to participate in the FG / interview. Once the participants had accepted the invitation, the PIL and consent form were reviewed with them at the start of the interview/FG. Furthermore, the researcher addressed all questions, to ensure that participants understood the aims and conditions of the discussion prior to their participation. Upon agreeing to participate, participants signed the consent forms, which were then collected by the researcher. Participants were reminded that they could withdraw from the study at any time, with



no penalty, and that their responses would be treated as confidential. Examples of consent forms and PIL are provided in Appendices 1.6-7.

### **3.13.5. Topic guides**

Topic guides are usually created to structure the FGs and interviews. Questions in topic guides are usually open-ended with probes added to each question. Probes aid in providing feedback, following up with comments on responses, guiding the conversation in a specific direction, seeking more details, and encouraging respondents to give alternative opinions (Kleiber, 2014). With topic guides containing both questions and probes, the researcher could construct a complete picture, based on participant descriptions of their experiences (Kleiber, 2014). The interviews and FGs topic guides were created and conceptualised based on the research questions, propositions and the literature review. This helps the processing of quality data collection, which is characterised by credibility, thoroughness, validity, representativeness, reactivity, reliability and replicability (Roulston, 2010).

In this case study, topic guides were used with FGs and interviews at all stages. Appendices 1.8-9 provide examples of topic guides. Stage One used topic guides to help the researcher lead the FGs. The purpose of these FGs was to explore the perceptions, expectations and experiences of different stakeholders regarding the newly developed PharmD programme, whether positive or negative, and any recommendations for improvement. The researcher used probing to further develop participant comments. The topic guide, emerging themes and discussion dynamics of the FGs were discussed with the research supervisors.

In Stage Two, topic guides included open-ended questions derived from Stage Two propositions, bearing in mind that the order of questions could vary according to the direction of the discussion. The questions were augmented with probes to ensure that all questions were covered consistently across different interviews, and to stimulate the interviewees and seek further clarification, if needed. The supervisors reviewed the propositions and the topic guides to ensure that the tool was well prepared and reflective.

Topic guides were created for each respondent category at Stage Four, based on selected propositions relevant to this category, as shown in Table 6.4. All topic guides were peer reviewed by the supervisory team to ensure consistency and alignment with research questions and propositions, and alignment with the categories.

To foster quality and rigour, the topic guides were piloted to mirror the research questions and propositions and to enhance the researcher's familiarity with them. The pilot interview respondent, the PharmD alumnus, was requested to provide her feedback about the interview questions, which was taken into consideration in developing other topic guides, tailoring them to the category of respondents, whether students or faculty or preceptors, and in improving the interview process (Creswell, 2013).

### **3.13.6. Conducting focus groups and interviews**

The researcher facilitated all FGs in Stage One, which was an exploratory stage, however, several steps were taken to reduce the potential power imbalance between the researcher and the participants, albeit not eliminate it, as noted in Section 3.12.3. Extra care was also taken in the facilitation of the FGs. This care was demonstrated by encouraging the researcher to enhance her facilitation skills, including good listening, flexibility and neutrality, which enable the development of trust and openness in participants (Gibbs, 2012). In the early stages of this PhD research, an exploratory pilot FG was facilitated by the researcher under the observation of the researcher's supervisor, for a different study, which acted as a training opportunity for the researcher, as shown in the following extract.

*“Facilitating a FG for my supervisor’s own research at the University of Bath gave me the opportunity to demonstrate my skills in front of her. I found it easy to moderate the discussion, although everything was strange to me. I learnt from that FG that I need to provide a feedback to respondents about their responses, to ensure that I clearly understood what they said, especially as English is their first language but not mine.”*

Diary, August 3<sup>rd</sup>, 2013

Also, the researcher's supervisor observed the researcher while conducting the faculty FG in Stage One. The researcher conducted all interviews in Stages Two and Four, since no power imbalance or conflict of interest existed with interviewees. Similarly, the researcher conducted the FG with preceptors in Stage Four, because she did not have a previous or current working relationship with them or conflict of interest. An external researcher facilitated students and faculty FGs in Stage Four, because the researcher had a previous working relationship with some of them, from when she was a faculty member in the college. The involvement of an external researcher was to offset the conflict of interest and to reduce the potential power imbalance between the researcher and the participants, which could affect the nature of the data generated, as explained in Section 3.12.3. The researcher met the external researcher prior to the FGs and guided her in FG facilitation, because, as Crabtree and Miller (1999) point out, the success of FGs is dependent on the facilitator's skills. The external researcher was introduced to the research aims and topic guides through this orientation, and given the audio recording of previous FG to facilitate her understanding of the group dynamics, the context and the appropriate ways of asking questions.

### **3.13.7. Audio recording of focus groups and interviews**

Audio recording of interviews is important for both data management and analysis. The original recording can be used to clarify words, any ambiguity of meaning or inconsistencies, and to check the accuracy of transcriptions. It also makes the data accessible to supervisors or other researchers, if needed. This allows them to hear the conversations several times, consider the tone of voice and other clues that do not appear in transcription, which can help the interpretation and analysis. Finally, the original recordings provide researchers with a source of verbatim quotations to use in their thesis while writing the analysis findings (Halcomb and Davidson, 2006).

Rubin and Rubin (2012) suggested that some respondents take interviews more seriously when they are recorded because they consider their responses permanent and thus tend to provide accurate information. These benefits demonstrate that the audio recording of interviews can enhance the credibility and dependability of data collection and analysis (Tuckett, 2005).

All FGs and interviews were recorded using an audio recorder, allowing the researcher to give full attention to the discussion. The audio recording ensured that accurate details of the interviews and FGs were collected rather than relying on the researcher's memory when retrieving data, which is subject to bias and errors. On some occasions, the researcher took notes about important contextual remarks, since audio recording does not reveal non-verbal communication (Pearce, 2014).

At the beginning of the data collection session, the researcher confirmed with participants that recording was taking place and that transcripts and data analysis would be produced after the event and shared with them for checking and a quality review through a member checking strategy, as mentioned in Section 3.11.1.

### **3.13.8. Transcription of focus groups and interviews**

Transcription is the process of transferring spoken words from an audio-recorded interview into a written format. Verbatim transcription is the exact word-for-word transfer of the spoken format into the written. It is argued that the accuracy of transcription could be subjective and dependent on a transcriber's hearing and perception (MacLean, Meyer and Estable, 2004). Miles, Huberman and Saldaña (2014) argued that the first data reduction step takes place through transcription, which creates data that can be reviewed as often as needed, to ensure the validity of results and to provide transcripts for participant confirmation, for quality purposes. During the transcribing process, therefore, the researcher should consider and make notes about possible themes, in preparation for the analysis process.

The choice of who should undertake the transcription is a major decision, because the engagement with data starts while the interview is being conducted, and in the subsequent transcription. The focus during transcription should thus be an interpretation of meaning from the data rather than solely the clerical task of verbatim transcription (Halcomb and Davidson, 2006). Lincoln and Guba (1985) claimed that when a researcher handles transcriptions, this facilitates the continuous process between transcription and data interpretation.

The transcription process is generally costly because it is associated with human error, such as the potential misinterpretation of words due to cultural variations and grammatical mistakes. It is thus beneficial for researchers to transcribe their own interview data, especially as they were exposed to both verbal and nonverbal communication with participants throughout the interview. However, transcription of the data by another person, with advanced clerical skills, might ensure accurate transcription in a timely manner (Easton, McComish and Greenberg 2000).

In Stage One of the research, FGs recordings were transcribed by a research assistant, and then reviewed and checked by the researcher for common pitfalls in transcription, such as inaccurate punctuation, mistyped words that change the entire meaning of the sentence, and misunderstood or misinterpreted words. In Stages Two and Four, the benefits of the interview being transcribed by the researcher, such as initiating data interpretation outweighed the drawback of the extended time required and the cost. The researcher thus conducted the verbatim transcription.

It is important, however, to use a consistent transcription protocol because this increases the potential of compatible transcript “products” and inspires the researcher to conduct their data analysis (MacLean, Meyer and Estable, 2004). For example, in Stages Two and Four of this research, the researcher conducted the transcription utilising a specific website, (otranscribe.com), a free web application which reduces the difficulty normally involved with transcribing. In all transcripts, the researcher was entitled as “Researcher” and each respondent was given a key code instead of a name to ensure confidentiality. These codes were made up of specific characters, and were used to refer to respondents during the data analysis. All FGs and interviews were conducted in the English language, which is the second language for the researcher and the majority of participants. When needed, therefore, there was minor editing of some quotes when representing them as evidence in the findings section. This editing is in alignment with the traditions of applied social research, in which this is considered reasonable and a little editing is acceptable for transcripts and quotes, for the purposes of enhancing readability, such as re-punctuation, sentence reduction, and the deletion of repetitive words (Corden and Sainsbury, 2006). During transcription, pauses were not transcribed as “....” representing silence. The transcriber/researcher checked all transcriptions against the recording twice and

revised the transcript file accordingly. An example of unanalysed transcript is illustrated in Appendix 3.

### **3.14. Data analysis**

#### **3.14.1. Computer-assisted coding software (NVIVO)**

In Stage Four, the coding and retrieval of data was assisted by computer-assisted coding software (NVIVO) for Mac, versions 10 and 11, as illustrated in Appendix 4.2. NVIVO was chosen to increase the pace and organisation of the large amounts of data generated in this research, which were derived from multiple sources, and to allow multiple coding, which is challenging if done manually. NVIVO was also used to perform the clerical part of the qualitative research and to efficiently produce high impact results (Saldaña, 2016).

NVIVO software was used for storing, coding, and linking the data, and it was the responsibility of the researcher to make the important analytical decisions. Through the use of NVIVO, the researcher was provided with the time to focus on the coding outputs, and determine how they could be linked to answer research questions (Yin, 2014). To avoid the mechanistic approach to data analysis, the automated coding or text search functionalities in NVIVO were not utilised.

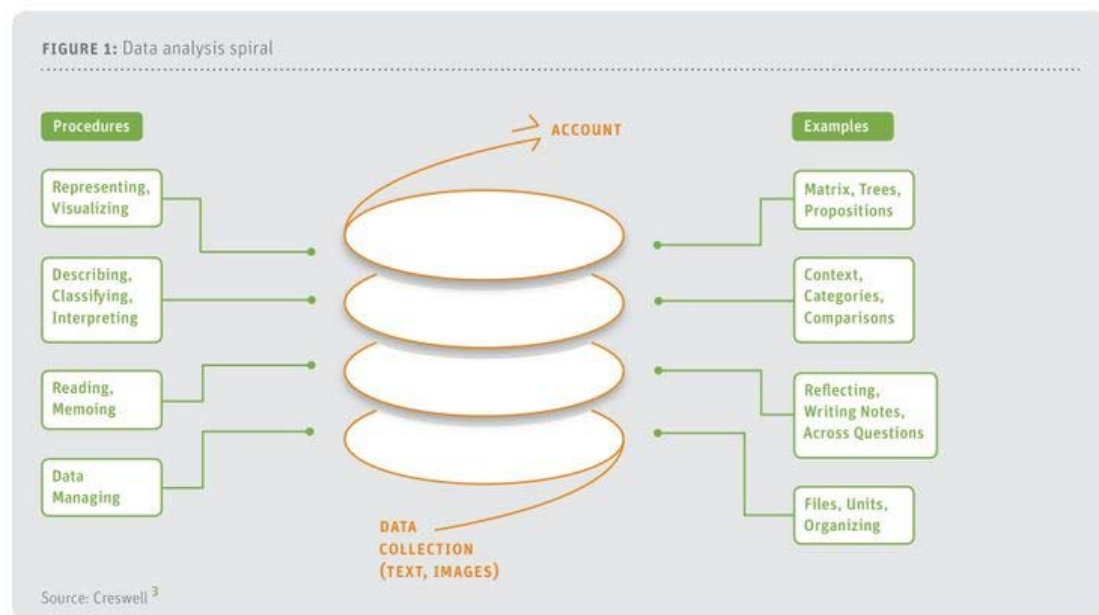
It is worth noting here that manual colour-coding in Word documents, was used in Stages One and Two, rather than NVIVO, as illustrated in Appendix 4.1. This gave the researcher the opportunity to experience both manual and computer-assisted coding and allowed reflection on manual coding skills while conducting the computer-assisted coding.

#### **3.14.2. Description of data analysis**

Data analysis in qualitative research involves central steps across all approaches to inquiry, such as preparing and arranging data, coding it, condensing the codes into themes, and expressing the analysed data as tables, figures or text (Creswell, 2013). Miles, Huberman and Saldaña (2014) noted that data analysis is a custom-built step

that is constantly revised in the light of simultaneous data collection. Creswell (2013) explained that the data analysis process is best symbolised as a spiral, as illustrated in Figure 3.2. The spiral is composed of analytical circles representing organising the data, reading describing and classifying data into codes and themes, interpreting the data, and representing the analysed data.

Figure 3.2 Data analysis spiral



[Source: Creswell, 2013, p.183]

### 3.14.3. Data analysis strategies and techniques

Yin (2014) proposed four general strategies and five techniques for data analysis in case study research. These are not mutually exclusive and some can be used in combination with others. In this case study, thematic analysis was used in the data analysis, while combining two strategies and one technique, as follows:

#### A. Analysis strategies

##### 1. Relying on theoretical propositions

As mentioned in Section 3.8.2, the conduct of this case study was associated with the development of two sets of propositions for Stages Two and Four.

These propositions yielded analytical priorities for analysing the data from FGs, interviews and documents. They guided the data collection plan and topic guide, and helped to organise the entire analysis and the explanations of findings (Yin, 2014). Stage Four propositions, which were derived from the CoP framework, were used to analyse data from respondents and documents. The analysis aims to indicate whether each particular proposition, representing a CoP framework element, is implemented in the QU PharmD programme or not. Linking data to propositions can be achieved by following analytical techniques, such as pattern matching, explanation building, time series analysis, logic models and cross-case synthesis (Yin, 2014). Explanation building was selected as an analytical technique for this research, while relying on the theoretical propositions analytical strategy, as will be explained below.

## 2. Working data from the ground up

Initial reading clarified that the data from respondent interviews or FGs suggested few useful concepts, not directly related to propositions. These concepts were of potential interest to the researcher because of their indirect relationship to the educational paradigms or experiences in the QU PharmD programme, which allowed them to contribute to answering research questions.

In reference to combining these two analysis strategies, relying on propositions and working data from ground up, Crabtree and Miller (1999) argued that coding strategies range from deductive, “prefigured”, codes and themes to inductive, “emergent”, codes and themes. They suggested that using “prefigured” codes is common in health sciences. However, these prevent the analysis from reflecting the complete views of participants because some inductive codes and themes that were not prefigured and predetermined might emerge during the data collection sessions. These emerged codes and themes might contribute to the understanding of the investigated phenomenon. In this research the researcher thus combined relying on theoretical propositions, which is deductive, and working data from the ground up,



which is inductive, strategies, as will be described in Section 6.5. Hence, after following these two analysis strategies in the data analysis, it was important to integrate the resulting parts of the analysis. Explanation building, one of the five analytical techniques suggested by Yin (2014), was used for this integration.

### ***B. Analytical technique: Explanation building***

In explanation building, analysis aims to answer the “how” and “why” research questions for the case study. This analytical technique is appropriate when causal links are complex, immeasurable and not expressed precisely. Several iterations might take place after the initial theory or explanation, by further development of further propositions and explanations. The final explanation makes important contributions to case study theory building, by reflecting on specific recommendations, which are more insightful than precise causal links (Yin, 2014). Explanation building facilitated an iterative case study-developed theory generating process in this research, for the purpose of developing ideas for future implementation and discussion, rather than being conclusive. This iterative case study-developed theory generation steps are identified in Table 3.15.

Table 3.15 Steps of iterative case study-developed theory generation

Steps	Description
1	Exploring the general experiences of QU PharmD programme stakeholders in the newly developed programme.
2	The findings of Stage One suggested some pedagogical issues that required deeper investigation.
3	A theoretical statement was created, suggesting that education programmes should be designed based on learning theories.
4	This theoretical statement stimulated the creation of the first set of propositions aimed at exploring any potential disconnect between learning theories and practices in the QU PharmD programme.
5	These propositions were tested in Stage Two. The testing resulted in supporting the disconnect. The extensive literature review resulted in the formation of a judgement that the paradigm with the greatest resonance for the PharmD programme was the CoP learning theory.
6	This judgement led to the development of the CoP framework in Stage Three of this research.
7	A second set of propositions from the CoP framework was created to analyse the QU PharmD programme.
8	This second set of propositions was used in Stage Four to analyse the QU PharmD programme through the lens of the CoP framework.

9	Relevant inductive details of the case were emphasised during data collection and analysis.
10	Deductive and inductive data were brought together to answer the research questions.
11	More integration of the data analysis and interpretation took place as a result of the member checking process.
12	The analysis of the QU PharmD programme in Stage Four ended with the development of an explanation and a case study-developed theory about the role of learning theories in education programmes in general, and the role of CoP theory in PharmD programmes, in particular.

### 3.14.4. Thematic analysis

#### A. Introduction to the thematic, content and discourse data analysis

Thematic analysis is a data analysis method characterised by finding, analysing and then presenting themes that exist in data. This is accomplished by organising and describing datasets in details, and then interpreting various aspects of the research topic (Boyatzis, 1998). From a methodological point of view, thematic analysis is similar to qualitative content analysis, which is a type of content analysis, in that it classifies large amounts of text into a large number of categories.

Thematic analysis was used for analysing the documentary, FG and interview data in this case study, because it aims to provide an integrated view of texts in their specific contexts, whether this text is respondent transcripts or documents. Braun and Clarke (2006) argue that thematic analysis is the first qualitative method of analysis that researchers should learn and apply because it provides them with the foundation skills for conducting other forms of qualitative analysis. Thematic analysis was selected because it is flexible, and compatible with both essentialist and constructionist paradigms within psychology, and with most qualitative methods (Boyatzis, 1998). It was considered the principal method and a distinct method of data analysis, rather than a process or a step within a variety of other methods or approaches (Braun and Clarke, 2006).

Berelson suggested that content analysis is a research technique that involves quantification for the analysed content of the data in a logical and neutral manner (1952, cited by Vaismoradi, Turunen and Bondas, 2013). This technique aims to test

hypotheses about texts, by analysing their manifest and latent content, identifying the styles and frequency of words used in the text, and the relationships between them (Vaismoradi, Turunen and Bondas, 2013). The involvement of quantitative analysis in content analysis is the major difference between it and thematic analysis. Content analysis was not considered a data analysis method for documents or FG or interview data in this research because the aim of data analysis in this case study was not to test hypotheses about texts by analysing their content quantitatively, nor to analyse words pattern and relationships.

Discourse analysis focuses on the core form, structure and construction of texts or meanings, without focusing on content. It aims to discover the rules, assumptions, hidden motivations and conditions of the development of a particular discourse (Brown and Yule, 1983). Discourse analysis was not used in data analysis for documents or FGs or interviews data in this research because the construction and structure of text was not the aim of data analysis. Rather, the aim was to analyse the content qualitatively to answer specific research questions.

#### B. Approach to thematic data analysis implementation

In following a case study methodology (Yin, 2014), specific strategies and techniques were adopted for data analysis. These strategies aimed to deductively code the data according to a pre-existing coding frame, which was derived from the case study propositions in Stages Two and Four, aiming to answer specific research questions. Inductive coding was used for concepts that were pedagogically sound and relevant to the research problem. During data analysis, the researcher's intention was not to focus on the prevalence of the themes in the data item or dataset, but on the existence of themes that are important to research questions or case study propositions. The researcher provided a detailed, rich description of particular aspects of the case study propositions, and other aspects considered significant, for the purpose of aligning inductive and deductive data analysis in a meaningful interpretation.

The researcher mainly focused on analysing data content at the latent level, by examining the underlying ideas and assumptions that shaped the semantic content of

the data, rather than analysing it at the explicit or surface level. While analysing the data, the development of themes involved interpretative work relating them to the case study propositions, which subsequently resulted in confirming or refuting the propositions. The analysis produced was not only a description of the texts from interview and FG transcripts, plus additional documents, but was an interpretation of how these texts relate to propositions, for the sake of generating a case study-developed theory.

Finally, while conducting the data analysis, the researcher followed the social constructivism paradigm as an epistemology. This implies that meaning and experience are socially and culturally produced and reproduced between the researchers and researched, through interactions, which means that they are not inherent within individuals. The decision making process about using thematic data analysis for analysing all data is presented in the following diary extract:

*“When I read the “Using Thematic Analysis in Psychology” article by Braun and Clarke from 2006, I made some decisions, which I shared with my supervisors and I received their feedback about them. The purpose of making these decisions now, prior to analysis, is to keep the on-going reflexive dialogue about the following important issues throughout the analysis process:...”*

Diary, August 11<sup>th</sup>, 2015

### C. Thematic analysis steps

The data analysis was comprised of seven steps representing the data analysis spiral (Creswell, 2013), explained in Section 3.14.2, and presented in Figure 3.2. These seven steps of data analysis are demonstrated as circles and cycles in Figure 3.3, which indicate a continuous movement between the seven steps of data analysis.

The first step of data analysis aimed to organise the data into computer folders and files, giving appropriate names to the files, to identify the type of data collection method, the stage, the respondent category and the date of data collection.

In the second step, transcripts and documents were read several times, to be immersed in the details of the dataset, before going into detail. On specific occasions, notes were made, to indicate a need for clarification or to indicate a key concept.

The third step involved describing and classifying the data into codes and themes. This classification took place by identifying phrases in the text that related to the study's propositions, topic guide and ultimately, research questions. In this manner, pre-determined themes were created that reflected the propositions, outlined in Chapters Four and Six, then coding phrases were grouped around these themes. Sections and sentences containing these phrases were sought out and organised into the pre-determined themes, emphasising relevant quotes. Themes were then reviewed for similarities and duplication and for multi-coding schemes.

In the fourth step of analysis, the researcher aligned the list of themes, ensuring that they were related to the propositions. The aim was to produce explanatory accounts of the themes in terms of indicating whether the propositions were supported. There was constant movement between the raw data, themes, propositions and framework, to make sure that the quotes reflected the elements in the propositions.

In the fifth step, the analysis was re-focused by conducting an inductive data analysis for interesting features of the data that were indirectly related to the research questions and were considered important to the education paradigm, process or experiences. These interesting phrases of the data were coded in a systematic fashion across the entire dataset, then data relevant to each code was collated, and the codes were organised into potential themes.

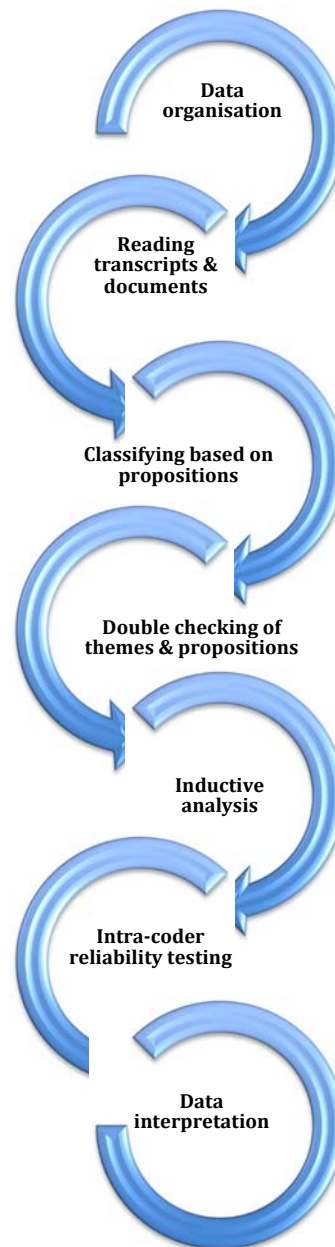
The sixth step was to conduct intra-coder reliability testing, or a code-recode procedure (Krefting, 1991). To perform the intra-coder reliability testing, the data was coded, left for about two weeks, then recoded, and the results were compared. In most cases, the intra-coder reliability testing was successful, and the majority of the codes matched.

The seventh step of analysis involved interpreting the data, so that the broader meaning of the data beyond the themes and propositions is conceptualised. Such interpretation is usually based on insights and perceptions, and therefore should be linked to the wider research literature developed by others. The development of meaningful data analysis was assisted in Stage Four by the matrix query function in the NVIVO software, which facilitated pairing and comparing different elements in data. The interpretation step took several cycles, involving the consideration of inputs from the member checking and peer review approaches.

Finally, the data was presented as text in the findings chapters, Chapters Four and Six. These findings facilitated the generation of the case study-developed theory in Chapter Seven.

It is worth noting here that all the cycles of the thematic analysis were reviewed and discussed with the research supervisors, to ensure peer examination. Their feedback and comments were considered during the cycles of data analysis.

Figure 3.3 Cycles of thematic analysis in Stage Four



### **3.15. Summary of chapter**

This chapter started by presenting the philosophical assumptions underpinning this research, justifying the research methodology. The research questions, case study methodology, stages, the “case”, context and propositions were identified and discussed. This was followed by an explanation of measures of trustworthiness and ethical considerations. The chapter ended by describing and justifying the data collection and analysis methods. The next chapter will present the findings of Stages One and Two of this case study.



## **4. Chapter four: Findings of Stage One and Two.**

### **4.1. Introduction:**

The previous chapter described the overall methodology of this research project. In this chapter, specific methodological aspects relevant to Stages One and Two are introduced, followed by a presentation of findings for these stages. Stage One explored the perceptions and experiences of a range of the PharmD programme stakeholders soon after its implementation. The findings of Stage One directed this case study to the more important issue needing examination: the potential disconnect between learning theory and practice in this programme and the impact of this on the student experience. Later in this chapter, Stage Two findings are presented to discuss the disconnect and propose the need for developing a theoretical framework for the most relevant learning theory for the PharmD programmes, which will be described in the following chapter.

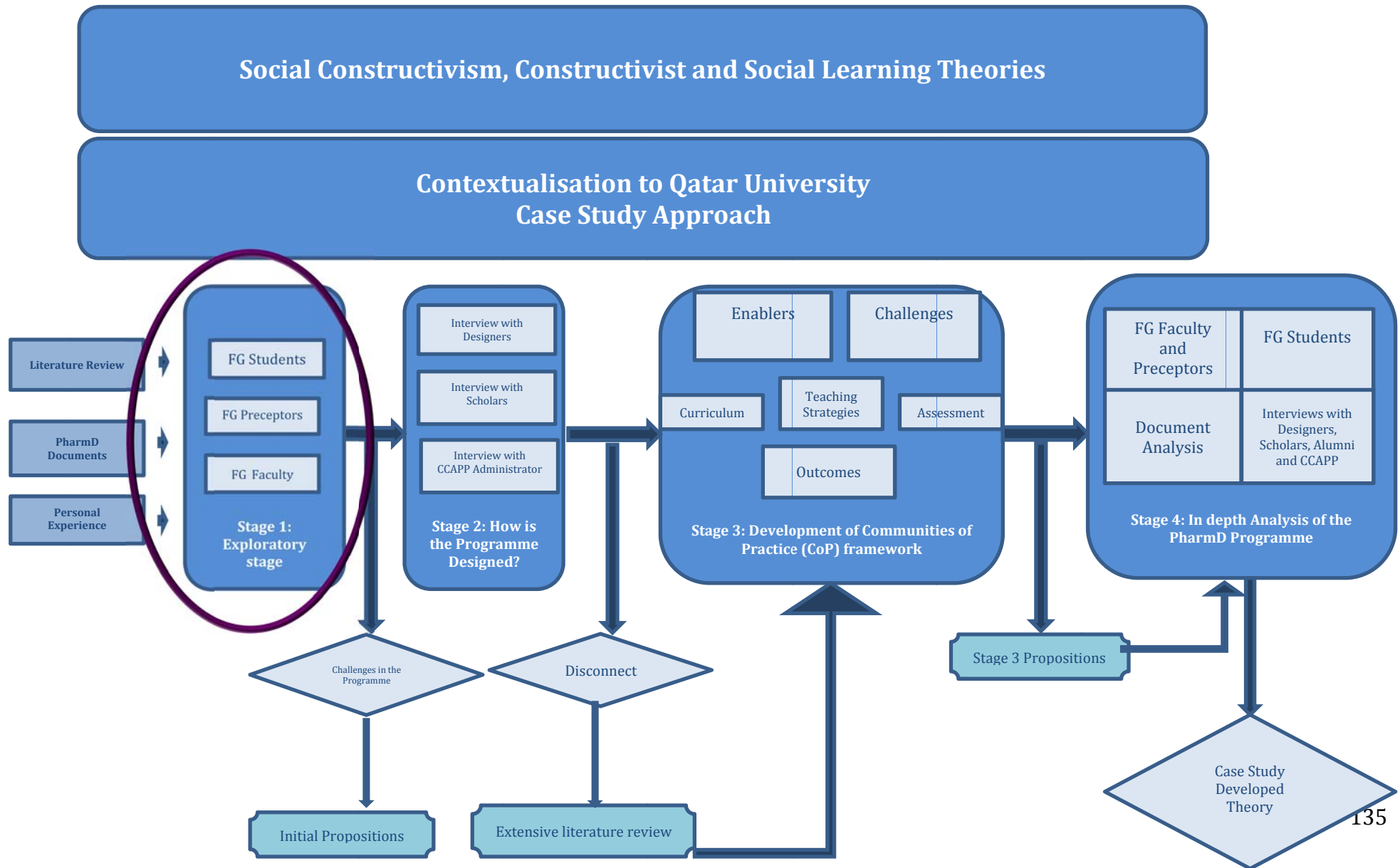
### **4.2. Overview of Stage One and its methodology**

#### **4.2.1 Background**

Since the QU CPH is the first and only college of pharmacy in Qatar and the first college of pharmacy outside Canada accredited by the CCAPP, it was appropriate to evaluate the design of the programme over its first few years. FGs were conducted, centring on an evaluation of the perceptions, expectations and experiences of students and other stakeholders, for the aim of exploring the overall design of the programme. This initial stage of the research was exploratory and aimed to obtain a better understanding of how the programme was designed and implemented. A preliminary document review was also conducted and suggested that a more fundamental review of the pedagogical aspects of the PharmD programme was required. Hence, this stage improved the focus of the research, developed the overarching research question, and guided the development of future stages (see Figure 4.1). The study evolved from

exploring the overall experiences of PharmD students, to an investigation of the role of learning theories in the PharmD programme. It is worth noting that this exploratory stage drew upon the personal experience of the researcher, as a previous faculty member, and having an understanding of the structure, operations, and academic requirements of the college and of QU. For example, the researcher's previous experience in the college helped her to better understand issues discussed in FG.

Figure 4.1. Stages of research (1)



#### 4.2.2. Data collection

##### *A. Documents*

Two key PharmD programme documents, described in Table 4.1, were reviewed in order to explore the programme's design and investigate any potential explicit links to learning theories.

Table 4.1 Documents reviewed in Stage One

Documents				
Name	Date	Source	Function	Code
CCAPP accreditation standards, addendum for the post-BSc PharmD programmes	2006	CCAPP website	Enumerate and explain the old CCAPP standards for the post-BSc PharmD programmes	CCAPP-old-D
The design document for the PharmD programme	2010	College archive	Describe the design and study plan for the PharmD programme	Design-D

##### *B. Focus groups*

FGs were chosen for this stage of the research because experiences are more likely to be revealed via social gatherings and interaction (Myers, 2004). Since the researcher was a member of the faculty in the college at the onset of this research and during Stage One, there was the potential for a power difference between the participants and the researcher. For this reason, it was appropriate to use FGs because the group members would gain the assurance of being with peers who might share the same perceptions (Creswell, 2013). Since this was an exploratory stage, it was appropriate to collect preliminary data using this method to identify issues of significance for a more detailed review (Krueger and Casey, 2009).

Three FGs were conducted with students and faculty in the academic years 2011-2012. These FGs provided useful learning and educational opportunity for the researcher in the FG technique. Also, they helped the researcher identify key themes

and experience issues, but were not included in the research. Six FGs were conducted in the academic year 2012-2013, which were included in Stage One (S1) of this research, as illustrated in Table 4.2.

Table 4.2 Focus groups conducted in Stage One in 2012-2013

Respondent	Number	Code	Notes
Students	3	S1- FG1, 2, 3- Students	Same cohort of students, but at three different points of time.
Faculty	1	S1- FG1-Faculty	—
Preceptors	2	S1- FG1, 2 – Preceptors	Same cohort of preceptors, but the first FG had limited attendance compared to the second.

#### 4.2.3. Data analysis

At this stage, inductive thematic analysis was conducted, rather than deductive, because the aim was to explore the participants' perceptions of the programme. Data was coded from the “ground up” (Creswell, 2013), trying to capture themes emerging from the data. The thematic analysis was performed using manual colour-coding in Word files, which enabled the researcher to become closely acquainted with both the data and the technique.

### 4.3. Findings of Stage One

#### 4.3.1. FG data

Four major themes are identified, illustrated in Table 4.3. It is important to note that the findings presented below do not aim to indicate the prevalence of perspectives or experience, but to illustrate an overview of perspectives.

Table 4.3 Themes and subthemes of Stage One findings

Code	Theme	Code	Subtheme
T1	Student learning	T1, 1	Knowledge and skills gained
		T1, 2	Integration of didactic courses and practical placements
		T1, 3	Number, duration and type of placements
T2	Students experiences with preceptors	T2, 1	Preceptor knowledge, skills and their benefit to students
		T2, 2	Preceptor understanding of the college's expectations, and their need for professional development activities
		T2, 3	Relationships between students and preceptors
T3	Role of faculty liaison	T3, 1	Faculty liaison's roles and responsibilities with practice sites
		T3, 2	Faculty liaison's relationship with preceptors
		T3, 3	Faculty liaison's role in assessment and evaluation
T4	Role of the college	T4, 1	Quality assurance
		T4, 2	PharmD graduate employment

#### 4.3.1.1. Student learning (T1)

The first theme (T1) centres on student learning. This theme includes issues about the knowledge and skills gained by students, the integration of didactic courses and practical placements, and the number, duration and type of placements.

##### (T1, 1) Knowledge and skills gained

Acquiring both skills and knowledge is fundamental in preparing students for a clinical pharmacist role upon graduation, and helping them to gain the necessary confidence in practicing that role. The majority of students commented in their FG, that they had gained the clinical and non-clinical skills required. Also, and most importantly, they had gained the self-confidence of being valuable members of the healthcare team. With this knowledge and skills most students were looking forward to making improvements in the clinical pharmacy practice and pharmacy profession:

*‘For example, when I went to Hamad General Hospital, there were some deficiencies in certain points related to clinical pharmacy practice in Cardiology. I had strength in this specialty, so I developed ways of improving*

*the practice, even if it was in small steps. Some of that is due to the knowledge that I gained.'*

S1-FG2-Students

Some students, however, suggested that they still did not have sufficient knowledge to prepare them for independent practice:

*'Regardless of job vacancies, let us be honest, I still don't have the confidence to work now, I mean after 3 months from now. I don't feel that I have the confidence that allows me to attend the whole clinical round by myself.'*

S1-FG2-Students

Some faculty liaisons expressed their concerns about the knowledge that students were gaining from some preceptors:

*'Our students are great, but they are learning bad habits related to clinical practice from some preceptors, and they are going to continue with these bad habits when they go to practice, or they are getting wrong information. So I do worry about the type of knowledge they are getting.'*

S1-FG1-Faculty

In their FG, the majority of preceptors acknowledged that students gained knowledge and skills in the PharmD programme by comparing them with students in the BSc programme. They indicated that PharmD students act as pharmacists, which allow preceptors to trust and depend on their practice. This perspective of preceptors contradicts some student perceptions about a lack of confidence to practice as independent pharmacists, as described above. Several preceptors noted that education programmes do not generally provide students with all the knowledge that they need to practice. Instead, they provide them with the skills to find the knowledge that they need in each stage. The majority of preceptors identified the importance of their preceptorship and teaching of students in developing and updating their own knowledge:

*'For me, preceptorship is good because it requires me to prepare myself. I read more and find resources, because they are graduate students. So, I feel that I should increase the level of my knowledge to meet their expectations.'*

S1-FG1-Preceptors

### (T1, 2) Integration

The integration of didactic courses, particularly therapeutic courses, and practical placement is a significant element of a successful PharmD programme because it facilitates the practical application of what is learned in classroom courses and a greater exposure to the therapeutic topics studied. The majority of preceptors, in their FGs, focused on the positive side of student experience by indicating that students in practical placements apply the theoretical knowledge that they gain in the college by solving real clinical problems under the guidance and supervision of their preceptors. Nevertheless, most students suggested that therapeutics courses and practical placements should be better integrated, in both the BSc and PharmD programmes:

*‘For example, we learnt the ideal way of doing a care plan, which we need to apply for the (APREP) course assignments. But when we go to the practical rotation, we do not do it the same way! So we kept it as a model for our assignments and the practical reality is something different. Also, we do not have therapeutic courses in the PharmD to help us.’*

S1-FG3-Students

Some students argued that the depth of therapeutic courses in the BSc was not enough, and did not prepare them for practical placements in the PharmD programme:

*‘We took therapeutic courses during the BSc. They were basic therapeutic courses, and not enough to go on the rounds or placements of the PharmD. I believe we need to have in-depth therapeutic courses in the PharmD.’*

S1-FG3-Students

A lack of integration was also demonstrated between what is taught in the practical placement and what is assessed in the OCE, which had a negative effect on student preparation and performance in this major assessment. Most preceptors were not aware of the structure and technique of the OCE, and thus they did not prepare the students for this type of assessment during their practical placement, as explained by some students. This lack of integration further illustrates the lack of coordination and collaboration between the college and preceptors in preparing students for the OCE. The integration between theoretical courses and practical placements, and the



collaboration between faculty and preceptors, emerged as important issues to be more deeply investigated and discussed in subsequent stages of this research.

### (T1, 3) Number, duration and type of practical placements

The number, duration and type of practical placements in the PharmD programme are important decisions that need thoughtful planning and implementation because they comprise the main components of the PharmD programme. Most preceptors suggested that eight months of practical placements provide students with the basics only, and that they need longer periods and extensive exposure to specialised placements, to practice the role of advanced clinical pharmacist. In their FG, some students suggested that they would have liked to be students for longer periods of time to be independent and confident in their real practice:

*‘One year might be enough but not eight months. .... Or, as discussed previously, we can have two continuous months instead of one in each important specialty, like two months in cardiology.’*

S1-FG3-Students

Adding major placements as mandatory for all students, such as a placement in infectious diseases was suggested. Students also perceived that student placements in the community pharmacy rotation would improve clinical pharmacy practice in these areas, which is currently not well developed. Most preceptors supported the idea of adding mandatory rotations in infectious diseases or kidney dialysis:

*‘Even if they studied it in the college, this is not enough. I think they should have a rotation in infectious diseases and in renal patients, such as transplants and dialysis. Patients on dialysis need special care and a lot of interventions from the clinical pharmacist, such as adjusting the doses. So it is a very good field for clinical pharmacists.’*

S1-FG1-Preceptors

**T1 theme suggests that students generally believe that they acquired much knowledge and skill in the PharmD programme through practical placement. However, there were concerns from some students and faculty about the depth**

**and quality of the knowledge gained. Most students and preceptors expressed a desire to have longer, broader and more extensive exposure to practice through placements because these are key learning tools and strategies in professional development. Most students expressed a need for deeper integration between theoretical knowledge, practical placements and assessment tools. This illustrates the importance of coordination between theory and practice, and between university and the practice sites for the ultimate benefit of the students.**

#### ***4.3.1.2. Student experiences with preceptors (T2)***

The second theme focuses on student experience with their preceptors at the practice sites. This theme discusses the knowledge, skills and performance of preceptors, and the benefits that students gain from preceptors, the preceptor understanding of college expectations of their role and their need for professional development activities, as well as the relationship between students and preceptors

##### (T2, 1) Preceptor knowledge, skills and performance and their benefit for students

Preceptors play an important role in student learning in the practice sites, because students spend extended periods of time with their preceptors. Therefore, it is vital to ensure the appropriateness of preceptor knowledge, skills and performance, to ensure that students are benefiting from them, with consistent and effective learning experiences, mentoring and assessment practices across practical placement sites. There was a consensus amongst preceptors that clinical rounds gave students the opportunity to clearly observe the preceptor's application of the clinical pharmacist role. They added that their discussion of clinical cases with students was very useful for both parties. At the beginning of their PharmD programme, most students explained their expected benefits from preceptors, particularly as a role model:

*'I need to see someone in front of me telling me or showing me what they are doing and then I can apply that, because I have the idea about clinical pharmacy practice, but I do not know how to apply that. So, I need someone to do that in front of me so I can learn how to do it practically.'*

S1-FG1-Students

Students commented that their experiences with preceptors were generally inconsistent across sites, which affected their performance and confidence. Some students added that some preceptors lacked the required knowledge and skills:

*‘I think they lack experience because they have just finished their PharmD and I think they need more training. They are still not at the level to be given freedom, like some are good but others are not.’*

S1-FG1-Students

In subsequent stages of the programme, this view was more evident, when most students suggested that the benefits they gained from preceptors were situational and variable depending on the knowledge and skills of the particular preceptor:

*‘Some preceptors expect a high level of basic knowledge from me, so that they build it up with their knowledge or experience. Other preceptors go with me from level zero and build that up by teaching. If the preceptor who taught me in a previous rotation had deficiencies, then when I go to another preceptor in another rotation, he would say: Ok you should have known this in previous rotations. This is problematic for me as a student.’*

S1-FG2-Students

Students felt that they did not gain much knowledge from some preceptors, especially in therapeutic discussions and care plans, either because these preceptors were not knowledgeable and skilled or because they did not spend enough time with students. Hence, some faculty liaisons suggested that student evaluation and feedback about preceptors in the site evaluation forms should be considered in the selection of the preceptors or placement sites, or in the professional development activities conducted for preceptors. The programme should evaluate preceptor performance:

*‘If you want to have the title, you have to be involved, you have to put in some time, so I suggest that maybe the PharmD preceptors may need to go through some evaluation, especially now they are getting paid.’*

S1-FG1-Faculty

Other faculty liaisons suggested that differences among preceptors could be considered as strengths:

*'I almost think that one of the strengths of the programme is the different styles of preceptors, I think they are actually diverse across sites, so the students will have experience to deal with everything and to adapt to many different situations'*

S1-FG1-Faculty

This data suggests that preceptors believed that they were of benefit to the students, in contrast to the student perceptions. The difference in perspective between students and preceptors in this particular subtheme is not surprising, especially with the potential lack of guidance and clarification of expectations from the college to preceptors, as will be discussed in the following subtheme. The selection and evaluation of preceptors should be given more attention because of the important role that preceptors play in student learning experiences.

#### (T2, 2) Preceptor understanding of the college's expectations, and professional development needs

Preceptors' understanding of the college's requirements and expectations is essential for their fulfilment of these requirements. The majority of faculty liaisons suggested that this understanding is particularly important for preceptors with no experience of mentoring students in practical placements in the BSc programme. Faculty liaisons felt that those preceptors had thus never been introduced to the college expectations. Most students suggested that QU PharmD graduates are not ready to serve as preceptors shortly after graduation, and that they should be better prepared before being given this important role. They added that preceptors should be enrolled in professional development workshops to orient them to the college expectations and to support them in the mentoring of students. This need to understand the college expectations was reinforced by most preceptors:

*'Sometimes I need to understand what is needed from me exactly. There is no clear direction, so I am doing my job without anyone's direction. I am not doing the same job that my colleague in another site is doing as a preceptor.'*

S1-FG1-Preceptors

Data from the faculty FG clarified that some structured activities took place in the PharmD programme to orient preceptors to their roles:

*‘Last year, the PharmD Director and the faculty met with preceptors at the beginning of the year before they started the rotation, and then met with them again towards the end of the year to get their feedback and reflections. So I think this was structured.’*

S1-FG1-Faculty

This data suggests that preceptors perceived that they needed better structured and more frequent orientations, which clearly detail the learning expectations of the college for each rotation. These orientations should include the professional development activities that preceptors need to meet learning expectations, rather than being general discussions. The college provision of clear expectations and structured professional development activities to preceptors facilitates consistent student mentoring and assessment. This ultimately prepares students for their future roles as clinical pharmacists.

### (T2, 3) Relationship between students and preceptors

Building a good relationship between preceptors and students is fundamental in establishing a healthy and transparent learning environment, which facilitates open communication, respect and effective learning. However, most students perceive this relationship as negative:

*‘Sometimes the preceptors are knowledgeable, but not respectful. Sorry, but I would sacrifice the knowledge, but not the respect with me.’*

S1-FG2-Students

Some students suggested that preceptors feared or hated them because they imagined that upon graduation PharmD students would be a threat to their jobs. This perceived jealousy and insecurity prevented them from providing a good learning experience and respectful interaction. The relationship between students and preceptors did not arise in FGs with the other stakeholders.

**Generally, the data in this theme and the subthemes about preceptors suggests that they did not have adequate, clear and close guidance and mentoring from the college, followed by appropriate evaluation. Focusing on preceptor mentorship as well as evaluation would strengthen and standardise their vital role in student learning in the practical placements.**

#### ***4.3.1.3. Role of the faculty liaison (T3)***

The third theme (T3) focuses on the role of the faculty liaison. This theme includes issues related to the role and responsibilities of faculty liaisons, their relationship with preceptors, and their role in assessment and evaluation.

##### (T3, 1) Faculty liaison role and responsibility in visiting the practice sites

Faculty liaisons contribute to the learning experience of students through their visits to practice sites, where they mentor and monitor preceptor performance, and ensure successful learning experiences for students. Some faculty liaisons are hired by the practice site on a cross-appointment basis, acting as role models for clinical pharmacists in clinical pharmacy practice and research, as explained in Section 1.4.5. As noted by the majority of students, faculty liaison visits to the placement sites were very beneficial for both preceptors and students. These visits helped preceptors to identify and reduce gaps in practice, and helped students by following up their learning progress and performance. Some students therefore suggested that faculty liaisons themselves should precept students. Some preceptors also valued the contributions of faculty liaisons in providing them with guidance about student learning, and in demonstrating an active leadership role:

*‘I feel sometimes that this liaison from the faculty is a leader for me. Like we got an agreement from the beginning about what things to discuss, how many presentations the student should make. They lead us because they are more experienced than us in the academic field.’*

S1-FG2-Preceptors

Some preceptors argued in their FG, however, that the role of faculty liaison should be mainly to lecture students in classrooms, or follow their academic performance with their preceptors, rather than to regularly attend the clinical rounds or clinical discussions during a student's practical placement. Preceptors had different perceptions about the adequate frequency of faculty liaisons visits, ranging from once a month to once every one or two weeks. This opinion about the adequate frequency of faculty liaisons visits to practice sites was different from the opinion of most students, as illustrated below:

*'They have a good role, but let them come more frequently. We have the perfect clinical discussion when the liaison comes, so we understand the whole topic in detail. Without the liaison we do not have good clinical discussions.'*

S1-FG2-Students

In their FG, most faculty liaisons acknowledged that conducting more liaison visits is better for both student learning experience and for clinical practice, through their cross-appointment roles at practice sites. They added that their high teaching workload prevents them from providing more visits, and suggested that the PharmD programme should recruit more faculty liaisons.

This data indicates the significant role that faculty liaison has in the learning experience of students and in the precepting experience of preceptors. However, students indicated that they require more frequent and regular faculty liaison visits, to get the best benefits from this role. The minor resistance of preceptors to an expanded role of faculty liaisons might have resulted in, and might also contribute to, an imperfect relationship with them, which will be discussed in the following subtheme.

### (T3, 2) Faculty liaison relationships with preceptors

Both preceptors and faculty liaisons play an important role in the student learning experience, through their specific expertise and responsibilities, and therefore healthy relationships and coordinated activities are fundamental in achieving their goals. Preceptors in their FG illustrated variable views about their relationship with faculty

liaisons. Some described the relationship as perfect. Others were not entirely impressed with it:

*'I wish they were more certain when it comes to what they say about practice and how they approach that professionally. I think we sometimes feel sensitive when they are involved in our practice. We do not want them to be involved.'*

S1-FG2-Preceptors

Students observed some sensitivity between preceptors and faculty liaisons, as suggested in their FGs. Some students felt that preceptors did not act naturally in front of the liaisons, artificially precepting them in a 'perfect way' that did not represent their usual practice. This artificial environment reduced the benefit that students gained from liaison visits. Faculty liaisons did not explicitly express their thoughts about their relationship with preceptors. Implicitly, some faculty suggested that preceptors were following their style and procedures, which could possibly imply a positive relationship:

*'I started to realise that same preceptors were using things that they learned from working with us over the time. So I would say from my short time here that quality in hospitals is improving as we move forward.'*

S1-FG1-Faculty

Based on this data, it can be argued that the relationship between faculty liaisons and preceptors is not optimum. This causes the preceptors to act unnaturally in front of liaisons or to become sensitive about their involvement in practice. This suboptimum relationship might be attributed to their unclear roles and responsibilities. The relationship between preceptors and faculty liaisons will be investigated more thoroughly in subsequent research stages.

### (T3, 3) Faculty liaison roles in assessment and evaluation

Student assessment is an important element of their practical placement, because it provides them with necessary feedback about their performance, strengths and weaknesses. In the QU PharmD programme, one of the key methods of student assessment is conducted through an evaluation tool, completed by the preceptors, at



mid- and end points of the practical placement period. At the end of each practical placement in the QU PharmD programme, students also complete an evaluation of the practice site, which implicitly involves an evaluation of the preceptor, as explained in Section 1.4.3. In their FG, most students explained that they perceive preceptor evaluations as unfair, because they tend to focus on weak points and areas for improvement, as requested by the college, rather than on equally identifying strengths. Some students therefore suggested having these evaluations conducted, or at least closely discussed, with faculty liaisons, as the following example illustrated:

*‘Even if faculty liaisons are not going to evaluate us, let them, at least, read the evaluation that the preceptors made and discuss the evaluation with them in detail. Then let them discuss plans for improvement.’*

S1-FG2-Students

Some faculty indicated their disagreement with more involvement in student evaluation, because they spend less time with students than preceptors. These liaisons expect the preceptors to develop their assessment skills by being independent in their assessment. Most liaisons suggested that their role should be a supportive one only. Overall, preceptors concurred that they are the ones who should conduct student evaluations, and that the faculty liaison role should be limited to explaining the evaluation forms to them and clarifying the college’s expectations.

Providing constructive feedback is an essential skill for students and preceptors when conducting evaluations (preceptor evaluations of the student and student evaluations of the site). Most faculty liaisons argued that it is the faculty liaisons’ responsibility to orient preceptors and students to this important skill, because of their expertise as educationalists and assessors. Some liaisons added that if students provide constructive feedback about the practice sites and the preceptors, then evaluation tools would become valuable for selecting, developing and deselecting preceptors and sites:

*‘I do not think that the forms should be confidential or anonymous forms. Instead, we need to encourage the students to give negative feedback about the preceptors. For example, in the BSc programme, feedback workshops were conducted with preceptors and students to encourage them to give negative feedback.’*

S1-FG1-Faculty

**It appears from the above theme and subthemes that the important role of faculty liaisons was not clearly identified in the PharmD programme design, or explicitly introduced to preceptors and students. This lack of clarity created role ambiguity and overlap, as well as sensitivity between liaisons and preceptors.**

#### ***4.3.1.4. Role of the College (T4)***

The fourth theme (T4) addresses the role of the college in providing a healthy learning environment for all stakeholders. A healthy learning environment is achieved by ensuring quality and by helping students to secure job opportunities.

##### (T4, 1) Quality assurance (QA)

Providing a healthy learning environment is an important factor in the quality of any educational programme, which can be enhanced through effective organisation and communication. The College of Pharmacy was responsible for organising all PharmD related issues and was responsive to all stakeholders needs, which was appreciated by the majority of preceptors, as illustrated in the following example:

*‘I think that the college support is perfect. They arrange everything with the practice sites, so that when students come, they find their training cards and their access to computers ready. They make life easy this way. The schedule is also ready on time. If we need a change in the schedule they are flexible.’*

S1-FG2-Preceptors

Students felt that roles and responsibilities were vague. Most suggested that the college should create a policy about the responsibilities of faculty liaisons and preceptors in terms of the number of hours they spend with students, the evaluation criteria for students and preceptors, and the OCE. All students felt that the college should closely monitor the learning experiences of students for at least the first few years of the PharmD programme development. Almost all faculty liaisons argued that developing preceptors is the most important quality measure for the college to ensure. They suggested that the college should recruit a professional development specialist for preceptors:

*‘We need to hire a professional development specialist for preceptors, who is specifically there to train them. This person should do all the workshops that are related to preceptors, developing their skills from the basic level to the advanced level.’*

S1-FG1-Faculty

Hence, the role of the college in ensuring quality extends beyond organisational and scheduling activities, to quality assurance.

#### (T4, 2) PharmD graduate employment

The PharmD programme prepares its graduates to practice at the level of advanced clinical pharmacist, who are greatly needed by the pharmacy profession in Qatar. Some students from the first FG expressed their worries about future employment:

*‘The employers need someone who has the certificates, but who also has experience, and I heard this from different people in different settings. We will have the certificate when we graduate, but not the experience.’*

S1-FG1-Students

Almost all students argued that it was the college’s responsibility to secure job opportunities for them, as exemplified below:

*‘Now we are about to end this programme and we should have submitted our CVs and applied for jobs. We were supposed to hear something about employment from our college, but we have not so far! The picture of our career is not clear till now.’*

S1-FG3-Students

**The above theme and subthemes suggest that quality assurance should not solely focus on the coordination activities of practical placements. Instead, quality assurance should ensure that students are getting the expected benefits from their preceptors, preceptors are clear about their role, and faculty liaisons are an effective addition to the programme. Also, it seems that the college did not explicitly discuss employment opportunities with the PharmD students, which**

**affected their confidence about their skills and qualifications being attractive to employers. Discussing the job market and opportunities with students is important to maintain student motivation to learn and practice.**

#### ***4.3.1.5. Summary of FG data***

Four major themes emerge inductively from the FGs data analysis during this exploratory study.

The first theme centres on student learning. The data reveals that students gained skills, but in some cases not adequate knowledge to prepare them to practice in a clinical pharmacist role. Students expressed concerns about the depth and quality of their learning, which affected their confidence about being independent practitioners. This was also commented upon by some faculty liaisons. Perspectives varied between whether the PharmD programme should better prepare students for the advanced clinical pharmacist practice, or whether it should only provide them with the necessary skills and tools to gain the required knowledge themselves. The data suggests that therapeutic courses, practical placements and assessment tools should be better integrated in the PharmD programmes for the purpose of gaining greater exposure to therapeutic topics and the appropriate practices to deal with them. This theme recommends adding major types of placements, and an increase in the number and duration of practical placements, so that students are more prepared and confident about practicing their roles upon graduation.

The second theme centres on preceptors. The data suggests that student experiences and relationships with preceptors were generally negative, and inconsistent. Students felt that they did not gain much knowledge from some preceptors and that some preceptors did not spend enough time with students. Faculty liaisons suggested developing preceptor knowledge by enrolling them in professional development workshops to orient them to the college's expectations. They also suggested that preceptors should be evaluated regularly by students and by the programme.

The third theme involves faculty liaisons. The data suggests that faculty liaison visits to the placement sites were very beneficial for both preceptors and students. The data

also suggests that liaisons are responsible for orienting students and preceptors to constructive feedback. However, their specific role was not well understood by the preceptors or students, which created some overlap with, and sensitivity on the part of, preceptors.

The fourth theme focuses on the role of the college. The data suggests that the college was organised, supportive and responsive, however, the programme should apply quality measures to ensure successful student learning by clarifying, coordinating, developing and evaluating the roles and responsibilities of preceptors and liaisons. The data also suggests that the programme should take a lead in explaining and possibly securing job opportunities for students after they graduate, so that they feel more secure and motivated during their study period.

#### **4.3.2. Documentary review**

The preliminary reading of the key documents, illustrated in Table 4.1, aims to explore any explicit link with learning theories in the design of the programme, rather than to conduct a full documentary analysis. This preliminary reading suggests no clear or explicit engagement with particular learning theories as influencers in the design of the programme. This finding is substantiated by a literature review of work published on pharmacy and PharmD programmes globally, as discussed in Sections 2.9.2 and 2.9.3, which suggested a dearth of published work on the relationship between learning theories and pharmacy or PharmD programme design. Nevertheless, there was an implicit reference to teaching strategy in the Design-D:

*‘An innovative ability-based curriculum and a student-centred approach to teaching and learning to provide the knowledge and skills necessary to graduate competent pharmacists to meet the healthcare needs of society’*

Design-D

This extract is the only comment identified through the preliminary documentary review as implying a pedagogical-based concept. It suggests that the intention of the programme designers was to provide a programme that is pedagogically student-centred. However, the findings from the documentary review fail to provide explicit and convincing evidence that pedagogical principles of work-based learning or any

other pedagogy were considered in the QU PharmD programme design or implementation. A lack of explanation of the theoretical or pedagogical principles associated with work-based learning in the PharmD programme has possibly led to vague design requirements and inconsistent structure. This led the researcher to question whether there was a potential disconnect between learning theories and educational practices in this programme, since no explicit reference to learning theories was evident. This preliminary review of documents also suggests the need for a more comprehensive analysis of these and other documents related to the QU PharmD programme in subsequent stages of the study, to examine the potential disconnect and analyse the design of the programme in depth.

#### **4.3.3. Summary of Stage One findings**

Stage One of this research comprises an exploration of the QU PharmD programme to determine the experiences of different stakeholders. Data suggests that the current pedagogical structure of the PharmD programme did not provide students with what they saw as sufficient knowledge needed to gain confidence for independent practice. Participants also suggested that preceptors were not meeting student expectations in terms of knowledge and relationships between students and preceptors. However, the role of faculty liaisons positively influenced the programme. The college should play a greater role in fulfilling its obligations of quality assurance, by balancing and clarifying the roles of preceptors and liaisons, and facilitating student employment to secure motivated learning experiences. The emergence of these findings clearly suggests that there were structural issues in the PharmD programme. These structural issues raise questions about the design and development of the QU PharmD programme in particular, and about the original design of PharmD programmes in general. The questions centre around the extent and role of learning theory in the design and delivery of PharmD programmes, in terms of influencing key educator development and responsibilities, the relationship between theoretical knowledge and learning from practice, the programme administration responsibilities, and consequently, student learning experiences. Thorough consideration of the underpinning theory and its relationship to student experiences is considered important, so as to address the structural issues identified in the QU PharmD programme.

A preliminary review of documents suggests that pedagogical strategies such as student-centred learning were mentioned in the design document. However, FG data and preliminary document review suggest that these pedagogical strategies were not based on theoretical pedagogical principles described as student-centred approaches. Consequently, they were not deeply embedded in the programme and did not consistently translate into pedagogical practices.

#### **4.4. Refocusing of project**

These diverse findings required the researcher to critically reflect not only on the design of the programme but also the delivery. This reflection guided the focus of this research and raised an important issue to be examined, the potential disconnect between learning theory and educational practices, and the impact of this on student experiences. This exploratory stage inspired the researcher to create research questions that necessitated deeper investigation, to be conducted in subsequent research stages.

#### **4.5. Overview of Stage Two and its methodology**

The findings of Stage One directed this research to an important issue needing examination: the potential disconnect between learning theory and practice in this programme. This emphasis led the researcher to reconceptualise the study and to develop several additional research stages as a means to explore this disconnect. Stage Two explores the potential disconnect between education theory and educational practice in the QU PharmD programme, as illustrated in Figure 4.2.

This stage contributes to answering the overarching research question of this study,

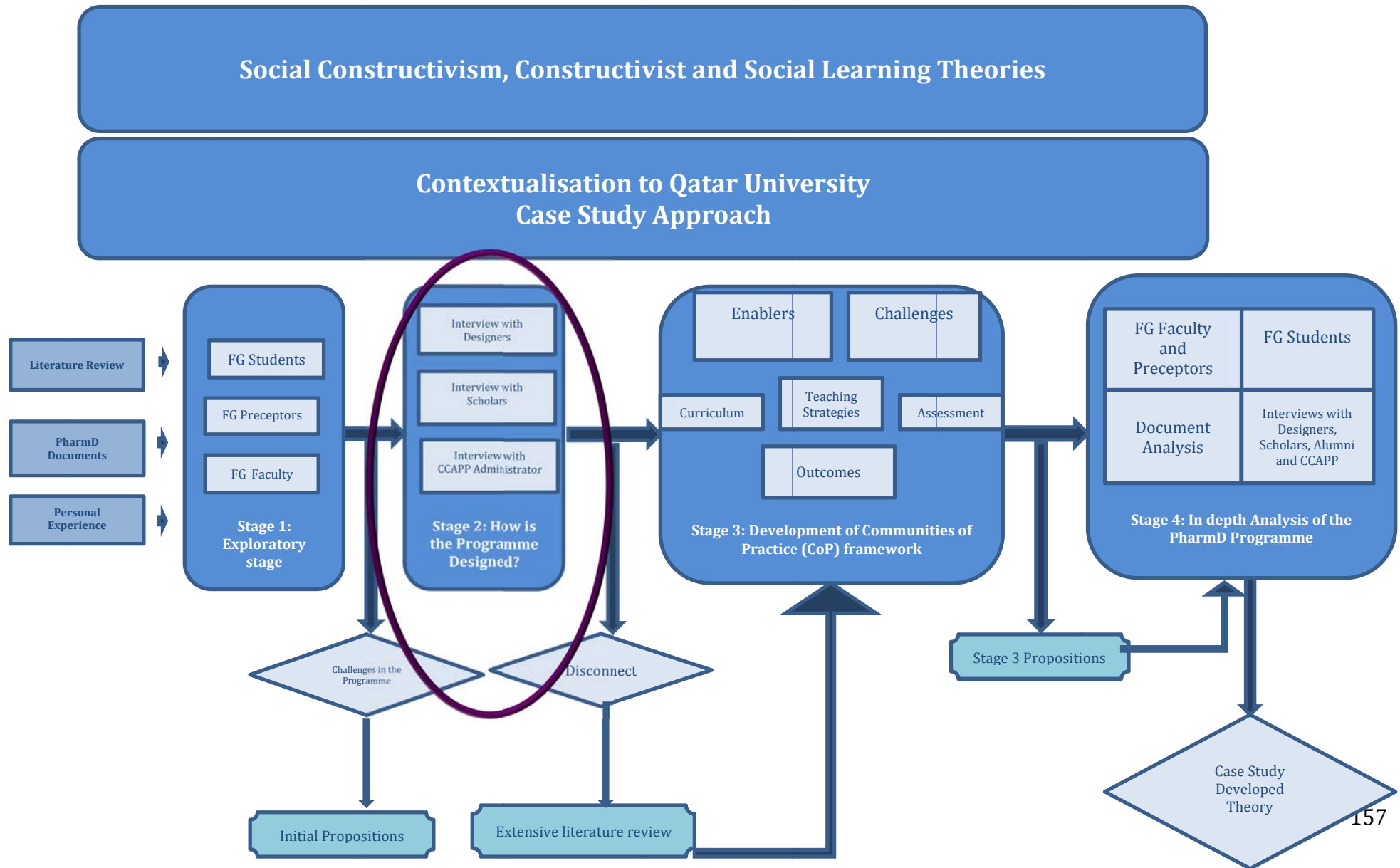
How have learning theories influenced the design and implementation of the QU PharmD programme?

by answering the first research question:

Is there is a disconnect between learning theories and educational practices in the QU PharmD programme, and if so, what is the nature of this disconnect?



Figure 4.2 Stages of research (2)



#### 4.5.1. Data collection

In this stage of the case study, semi-structured interviews with participants from different backgrounds and expertise were used as a method of gathering data. This provided multiple perspectives on the same phenomenon. The semi-structured interviews were conducted either face to face or via Skype, as illustrated in Table 4.4. Skype interviews were conducted when the researcher and interviewee were in geographically different locations.

Table 4.4 Interviews in Stage Two

Respondent	Interview type	Code
Designer 1	Skype	S2-Interview-Designer 1
Designer 2	Face-to-face	S2-Interview-Designer 2
Pharmacy education scholar	Face-to-face	S2-Interview- Scholar
CCAPP administrator	Skype	S2-Interview-CCAPP Administrator

These participants were selected because they have the expertise in developing and/or evaluating PharmD programmes at QU or worldwide. Topic guides were created for this stage and included questions derived from the propositions, while bearing in mind that their order could vary according to the direction of the discussion and the participant's role.

#### 4.5.2. Data analysis

Thematic analysis was conducted based on Stage Two propositions, which made the analysis deductive, rather than inductive. The thematic analysis was conducted using manual colour-coding in Microsoft Word files.

## 4.6. Stage Two propositions

In this case study, propositions for Stage Two and further propositions for Stage Four were developed, since each stage has a different emphasis, purpose, and role in answering the research questions. These propositions help to place limits on the scope of investigation, analysis and discussion, as discussed in Section 3.8.2.

The propositions of Stage Two emerged from the literature review, empirical findings of Stage One, informal discussions with colleagues and pharmacy education experts, and the personal experience of the researcher in respect to the QU PharmD programme and the educational and cultural context of Qatar. The propositions of Stage Two are illustrated in Table 4.5.

Table 4.5 Stage Two propositions

Number	Proposition
<u>1</u>	There are no learning theories that explicitly guide the design of many PharmD programmes including the QU PharmD programme.
<u>2</u>	There is a potential disconnect in the QU PharmD programme between learning theories and educational practices.
<u>3</u>	The design, implementation and outcomes of an educational programme are enhanced when based on appropriate learning theories.
<u>4</u>	The disconnect, which potentially exists between the design and implementation of the PharmD and learning theories, affects the curriculum, teaching strategy and assessment, and ultimately the student learning experience.
<u>5</u>	The design of the QU PharmD programme is based on observed best practices in other PharmD programmes worldwide and on achieving a set of learning outcomes, however, these should not be the sole sources used in designing an educational programme.
<u>6</u>	The faculty and preceptors need to develop a better understanding of the learning theories underpinning the design of a programme, to consistently facilitate the learning experience of students.

## 4.7. Stage Two findings

Six major themes are identified, which are based on, and framed by, propositions.

### 4.7.1. Proposition 1. There are no learning theories that explicitly guide the design of many PharmD programmes, including the QU PharmD programme

As discussed in Section 2.9.3, it is important to explicitly base education programmes on theories, however, the explicit link between learning theories and educational practices is not generally evident in pharmacy education, as noted in the interview with the pharmacy education scholar. He indicated that he was not aware of any pharmacy programme in North America or elsewhere (at the time of being interviewed) that is grounded in theory. He added that this lack of an explicit link to theories could be illustrated by the programme designers' use of labels that are derived from educational philosophies or learning theories, such as "Experiential Education", however, the explicit or consistent application of these labels is not always evident.

Several reasons have been postulated for the lack of an explicit link to learning theory. The pharmacy education scholar commented that one of these reasons is the history of pharmacy education: pharmacy education was historically an apprenticeship rather than formalised education. Another reason proposed by the pharmacy education scholar is that the culture of the pharmacy profession is generally focused on action and outcomes rather than processes. This culture results in practitioners and scholars feeling that theories are a waste of time, and are too abstract, as illustrated by the following quote:

*'Student select pharmacy because they want to get a job. They are not interested in theory. This culture is pervasive in the profession. With this kind of culture, theory is seen as a waste of time and too abstract. It is nice, but its up in the ivory tower. So, we just ignore it.'*

S2-Interview- Scholar

According to the pharmacy education scholar, the motivated practitioners who designed the pharmacy programmes do not have a background in education:

*'I think that there are very few trained academicians in pharmacy. Most of the people who design pharmacy curricula are motivated, intelligent and dedicated pharmacists without advanced training or background in education.'*

S2-Interview- Scholar

The PharmD designer himself supported the pharmacy education scholar's belief, and admitted not being a theorist:

*'I am not an education theorist and I do not have an EdD degree. I am a holder of PhD in pharmacy, and my goal was not to explicitly focus on education theory in the design of the programme.'*

S2-Interview-Designer1

There has been little development in the effective utilisation of learning theory in pharmacy education, as indicated by the CCAPP administrator in his interview. He explained that the CCAPP agency did not have standards related to learning theory. Instead, the new CCAPP standards are mapped to the professional body's set of competencies, NAPRA competencies, so that the expected outcomes of being a competent pharmacist are measured and given value by the CCAPP accreditation process.

It is important to recognise that solving the problems associated with pharmacy education and culture is a challenge, as argued by the pharmacy education scholar. Ideally, it would happen slowly, in small steps, by building a critical mass of pharmacy educators who realise the consequences of the disconnect between learning theory and practice. The scholar expected this change to take generations:

*'We actually need to start to produce more people who are both pharmacy and education scholars, who understand how the two blend. We don't have a critical mass of educationalists within the profession of pharmacy yet and until that happens we will never be able to solve the pharmacy education problems.'*

S2-Interview-Scholar

The scholar recommended that changes should start with small steps, at the level of the individual course, in a bottom-up, rather than top-down manner. He suggested that

bottom-up changes over the years would facilitate the evolution of pharmacy programmes towards becoming grounded in theory.

**These findings suggest that there were no clear and explicit learning theories guiding the design of generic PharmD programmes. The data indicates that this could be because of the history of pharmacy education, which was initially an apprenticeship approach, the culture of the pharmacy profession being outcome-oriented, the lack of knowledge about learning theories by programme designers and the limited advancement of learning theories in pharmacy education. The CCAPP accreditation agency, which has a strong influence on programme designs in North America and in areas of the Middle East, did not have standards related specifically to the inclusion or to the importance of learning theories in programme conceptualisation and design. Instead, it focused on preparing competent pharmacists based on a specific competency framework. Change in the culture of pharmacy education could happen, but it requires time, to implement small changes at the level of individual courses and to work towards the formation of a critical mass of pharmacy educators.**

4.7.2. Proposition 2. There is a potential disconnect in the QU PharmD programme between learning theories and educational practices

The previous section suggests that there is a disconnect between learning theories and educational practices in PharmD programmes in general, because learning theories have not explicitly been used to guide their design. The PharmD programme designer explained that learning theories were not explicitly considered in the design of the QU PharmD programme:

*‘My goal was not to explicitly focus on education theory in the design of the programme, but to design a programme that I know worked in another country and then refine to make it meet the needs of Qatar.’*

S2-Interview-Designer 1

The designer added that during the programme design, no decisions were made to use any learning theory. Instead, conscious decisions were made to ensure that the

programme's components met the learning objectives and outcomes. The other PharmD programme designer noted that in spite of the adoption of the experiential learning in the PharmD programme, which was implicitly derived from learning theories, learning theories were not considered in the design of the QU PharmD programme:

*'I think that the programme was novel to Qatar. However, it is not novel to have a PharmD programme with experiential training in the world. So I think that we moved forward with an implementation of experiential training without a deep examination of the theory behind.'*

S2-Interview-Designer 2

The PharmD programme designer further explained that the design group did not expressly look at any theory that was used in other programmes, or how it would apply in Qatar.

**It appears from the data from the designers of the QU PharmD programme that the QU PharmD programme, in common with other PharmD programmes, was not designed with specific and explicit learning theories to guide it. The design team did not implement experiential training or other learning concepts, because they belong to learning theories. This potentially confirms the disconnect between learning theories and educational practices in QU PharmD programme.**

#### 4.7.3. Proposition 3. The design, implementation and outcomes of an educational programme are enhanced when based on appropriate learning theories

The pharmacy education scholar argued that it is important to ground education programmes in theory. He explained that this is specifically important for pharmacy programmes because there is a strong desire to make pharmacy vocational. Designing pharmacy programmes based on learning theories has benefits:

*'What we need to do is to think about excellence, quality, and sustainability, and this is where theory is such an under-utilised tool in pharmacy education.'*

S2-Interview-Scholar

The CCAPP administrator reinforced the importance of designing the educational programme based on theories:

*‘So I think it is very important that there is kind of similar trail work around the programmes, so that the professors will not change from course to course the way they teach. This change makes it difficult for students to adapt each time to a different technique or theory.’*

S2-Interview-CCAPP Administrator

He added that a significant amount of work has to be done in pharmacy programmes to develop learning theory and models, rather than just changing the titles of programmes. One way of achieving this is adopting a unified model in programme design, which ensures consistency between curriculum, delivery, and assessment:

*‘I think there has to be concordance between the type of material, the type of technique used to deliver it, and then the type of technique used to assess it. So it is like a continuum.’*

S2-Interview-CCAPP Administrator

In QU, both PharmD programme designers noted that it is beneficial to consider learning theories in the PharmD programme, however, one PharmD programme designer argued that it is best to do so at the current stage of the programme, a few years after its development:

*‘I would say if there is time for learning theories to be considered it might be now, in other words from a sequence prospective. It might now be a good time to look at the programme from an education theorist perspective and say ok where we are doing well and where we are not doing so well, is there anything in the learning theories that will help us identify where our shortcomings are and to determine how to overcome our shortcomings?’*

S2-Interview-Designer 1

However, the other designer wished that this consideration and examination of theories had taken place at an earlier stage, specifically in areas of student assessment, to ensure that assessment methods were valid and aligned to programme objectives and learning outcomes, as well as to the context in Qatar:



*‘Probably another year in planning would have been beneficial. One aspect of that would be a review of the learning theory. In my mind I link that very closely to our assessment. Are our means of assessment valid according to our objectives? Are they valid in this particular setting?’*

S2-Interview-Designer 2

**Based on the above data, it appears that the pharmacy education scholar and the CCAPP administrator recognised the benefits of designing education programmes based on learning theories or unified models that ensure consistency between curriculum, delivery, and assessment. The PharmD programme designers partly recognised the significance of learning theory, whether at an early stage, during the design phase, or at a later stage, a few years after the programme is well established. They believed that it was important to consider theories, particularly when designing the assessment components of the programme, so that they are better aligned with the learning outcomes and the Qatari context. This implies that they do not fully recognise the importance of comprehensively considering learning theories during the early stages of programme design.**

4.7.4. Proposition 4. The proposed disconnect between the design and implementation of the PharmD and learning theory, affects the curriculum, teaching strategy and assessment, and ultimately the student learning experience

It is essential to understand the consequences of not grounding PharmD programme design in learning theory. One of these consequences is the lack of benchmarks:

*‘The programmes that are constructed without theory tend to produce confusion, because the outcomes to achieve and the implementation methods are not clear. In these programmes, we do not understand what benchmarks we have for success.’*

S2-Interview-Scholar

The pharmacy education scholar further explained that the benchmarks for success are learning theories, because they give clear guidance for implementation methods and outcomes. He added that atheoretical programmes are difficult to run in the real world

because they try to solve immediate problems in the curriculum with immediate solutions, which are not sustainable, rather than referring to benchmarks. Such solutions, he suggested, cause the programmes to break apart easily.

Another consequence of not explicitly applying learning theories in pharmacy programmes is the use of inappropriate teaching strategies. Students are treated as passive learners in these programmes, instead of being actively engaged in the learning process, as illustrated by the CCAPP administrator:

*‘The biggest problem for me in most of the programmes that I reviewed is that students are very passive, meaning that the professor goes to the literature, prepares everything and delivers PowerPoint presentations to the students. So students do not go through all of that literature, they take what the professor has provided, and that is set.’*

S2-Interview-CCAPP Administrator

The CCAPP administrator clarified that teachers adopt pedagogies that ‘transmit’ information rather than support the active learning role of students, and that this absence of an active role affects student learning in practical placements and could potentially affect their future roles as pharmacists.

The CCAPP administrator further noted that education programmes that are not based on learning theories are generally problematic when it comes to student assessment. He explained that programmes tend to rely on usual or traditional assessment models that are not well aligned with the curriculum or teaching strategies, which is not optimum, and that assessment should therefore drive curriculum and programme design. This argument from the accreditors does not align with social theories of learning, or with constructivist theory, which could suggest that accreditors are potentially locked into an assessment driven view of pedagogy. This view could be interpreted as meaning that accreditation agencies are primarily driven by their safety agenda and that they want to be sure that students can safely ‘do’ what needs to be done.

**The above data suggests that the proposed disconnect between learning theories and education practice has undesirable consequences. Atheoretical programmes lack the tools, outcomes and benchmarks for success, as provided by learning**

**theories, which make them unsustainable. The comments of key informants suggest that programmes follow traditional non-student centred teaching strategies and assessments, which lack alignment to the curriculum. The lack of an alignment in the design, curriculum, teaching strategies and assessment of programmes can potentially lead to negative and inconsistent student experiences, and to a lack of integration between theoretical knowledge and real practices. The above data also suggests that the accreditation agency agenda contradicts key pedagogical concepts in social and constructivist learning theories, because it accepts that student assessment is the driving force of their learning.**

4.7.5. Proposition 5. The design of the PharmD programme at QU is based on observed best practices in other PharmD programmes and on learning outcomes, however, these should not be the sole sources used in designing an educational programme

Since learning theories did not explicitly affect the QU PharmD programme, it is important to understand the factors that affected the design. The QU PharmD programme was designed as a progression from the BSc study plan and programme, as suggested in the interview with the PharmD designers, because of the need for a post-BSc clinical training programme opportunity. The design committee of the QU PharmD programme looked at different pharmacy programmes in the region, Canada and the USA, as well as programmes in which regional pharmacists were trained as clinical pharmacists. At that time, those programmes were considered well-established and best practice examples of PharmD education. The QU PharmD programme would be best developed in harmony, rather than isolation, with global practice in PharmD education. The PharmD designer suggested that the design of the PharmD programme aimed to achieve a set of learning outcomes rather than to adopt a learning theory:

*‘We could have designed a programme based on learning theories, which looks great on paper, but in reality it fails. To me, it is more important to use a hybrid of techniques, such as teaching towards achieving learning outcomes, without following any particular model.’*

S2-Interview-Designer 1

Additionally, the design committee aimed to comply with the available accreditation standards at that time, while considering potential changes to PharmD programmes in

Canada in the future, as explained by both PharmD designers in their interviews. This suggests that the effect of accreditation is paramount. Accreditation standards, also encourage programmes to base their design on achieving a specific set of outcomes or competencies:

*‘There is no prescription within CCAPP standards. Schools can do it the way they want, but at the end their students should be competent according to the NAPRA set of competencies or according to the educational outcome for the AFPC.’*

S2-Interview-CCAPP Administrator

The lack of theoretical background within the accrediting bodies and the reliance only on achieving a set of outcomes or competencies could be seen as a self-fulfilling prophesy for the disconnect between learning theory and education practice in QU PharmD programme:

*‘There is a dominant culture and history in pharmacy that is more focused in action rather than thinking, more focused in outcome rather than process and less focused on theory.’*

S2-Interview-Scholar

The programme design considered the culture and educational needs in Qatar by informally collecting opinions from stakeholders, aiming to advance the pharmacy profession. However, other cultural aspects such as gender were considered irrelevant, according to one of the PharmD programme designers, and did not affect the programme design; for example in assigning male preceptors to female students. This assignment did not concern the students or preceptors and was not discussed by any stakeholder in Stages One or Two.

**The above data illustrates the factors that influenced the design of QU PharmD programme. These include: best practices in other PharmD programmes, achieving a specific set of outcomes as expected by the CCAPP accreditation, and Qatar cultural and educational needs. However, the proposed disconnect in the QU PharmD programme and its consequences, observed in Stage One, suggest that considering these factors alone, without considering learning theories, is not adequate for successful and sustainable programme design.**

4.7.6. Proposition 6. Faculty and preceptors need to develop a better understanding of the learning theories underpinning the design of a programme to consistently facilitate the learning experience of the students

Educators (faculty and preceptors) should be aware of learning theories, so that they apply them in their teaching role in the PharmD programme. The understanding of learning theories solves problems associated with adopting teaching strategies and assessment, as noted by both PharmD designers in their interview. Students in nursing, pharmacy and medical schools are not routinely oriented in their education to teaching and mentoring skills, as explained by one of the PharmD programme designers. Yet, the existence of associations for the education of each of these professions, such as the International Association for Medical Education (AMEE) is promising, because it indicates that there are some health professionals interested in educational topics.

It is important to educate preceptors about evaluating and assessing student competencies within real life situations, as suggested by the CCAPP administrator in his interview, because this is the most important role of preceptors. However, misleadingly, as suggested by the pharmacy education scholar and one of the PharmD programme designers, educators are seen only as those who design the health professional programmes, and not those who teach students in practice. Pharmacy programmes have thus not invested resources in preceptor training and orientation, as noted by the pharmacy education scholar:

*“The preceptor model is a throw back to the apprenticeship model. With the move of pharmacy education to universities, BSc educated pharmacists started to train PharmD students at the practice sites, which is problematic. We did not have a theoretical model to understand this kind to change. We did not spend time or resources helping our preceptors to become educationalists or to understand learning theories.”*

S2-Interview-Scholar

The other PharmD designer, however, explained that preceptors are considered to be educators in the QU PharmD programme, and are receiving fundamental training, but not explicitly:

*“So I definitely believe they need to know the fundamentals about learning theories, and I think they are getting that. This may not be as explicit as*

*learning theories, but at the end of the day when they have students with them, they are educators in a clinical environment versus classroom environment. Objectives are the same, teaching and learning.”*

S2-Interview-Designer 1

However, it is not clear whether this implicit training was adequate to prepare preceptors for aligned teaching and assessment practices, especially with the pedagogical issues in QU PharmD programme, identified in Stage One.

**It seems from the above data that pharmacy programmes, generally, do not invest in training and preparing faculty and preceptors to be educationalists. Consequently, faculty and preceptors, in particular, lack a basic understanding and application of learning theories, which contributes to the disconnect between learning theory and educational practices. Data suggests that the QU PharmD programme provides training for preceptors, however, according to the pedagogical issues identified in Stage One, this appears to be inadequate.**

#### **4.8. Discussion of Stage Two findings**

Interviews with a pharmacy education scholar, two designers of the QU PharmD programme and a CCAPP administrator suggested pedagogical issues in the PharmD programme and supported the concern about a possible theory-to-practice disconnect.

Several potential reasons for the lack of engagement with learning theory were highlighted, such as the designers' lack of knowledge about learning theories, the limited evidence of learning theories being used in pharmacy education research, and the history and culture of pharmacy education. Evidence of this culture could be seen in the criticism of some scholars of the proposal for implementing learning theories in pharmacy programme design. These scholars criticised the proposal as too abstract, as suggested by the pharmacy education scholar. This left the curriculum with many elements of the original historical and cultural structure (Noble et al., 2011).

In the QU PharmD programme, as in PharmD programmes elsewhere, learning theories were not considered in the design and implementation, as clearly confirmed by the QU PharmD designers. Instead, the design of the QU PharmD programme was based on the best practices evident in other PharmD programmes, CCAPP accreditation standards, achieving a specific set of outcomes and Qatar educational needs. Wilbur, Paiva and Black (2015) highlighted the significance of customising the delivery of a “best practice based PharmD programme” in the QU PharmD programme, according to the dominant beliefs and cultural norms of the population and society, as well as the preceptors’ teaching skills and knowledge.

It is important to note that the CCAPP accreditation agency did not have standards related to learning theories. Its standards are instead based on the idea that assessments drive learning, which is a motivational learning model, as discussed in Section 2.3.5. Accreditation standards are mapped to the professional body’s set of competencies, so that the expected outcomes are measured by the CCAPP accreditation process. Nevertheless, the structural pedagogical issues observed in Stage One, and the proposed disconnect confirmed in Stage Two, suggest that outcome-based education (OBE) alone is not adequate for sustainable programme design, because atheoretical programmes lack the benchmarks for success in their curriculum. This finding is supported by medical education literature. Morcke, Dornan and Eika (2013) explained that OBE is an educational model, particularly in medical education, which is directed by specific outcomes. These predetermined outcomes are used interchangeably with competencies, and thus OBE involves outcome and competency-based education. They argued that there are two main problems associated with outcome-based education. The first problem is the absence of connections and alignment of outcomes, which naturally reflect assessment, and teaching or learning strategies. Outcomes are defined in these programmes, but the supporting teaching and learning activities are not, which resulted in education programmes achieving adequacy rather than excellence. The other problem is the original roots of OBE in behaviourism, which is an outdated learning theory in some learning contexts, with obvious criticisms, discussed in Section 2.3.1.1. These roots are associated with a gap between OBE and other learning theories that emphasise social context, previous knowledge, and learning style, such as constructivism and social theories of learning (Morcke, Dornan and Eika, 2013).

As the findings of Stage Two suggest, OBE and competency-based education are adopted and encouraged by regulatory bodies and accreditation agencies, such as CCAPP, which misleadingly moved away from its original behaviourism roots to define OBE and competency-based education as best and common practice. Even recent efforts to reconcile OBE with constructivist theory, by engaging students in appropriate activities, did not manage to change OBE's original behaviourist roots (Morcke, Dornan and Eika, 2013). It is worth noting that the alignment of accreditation with OBE, behaviourism, and motivational learning theories, contradicts the main concepts in social theories of learning and constructivism.

The scholar, the CCAPP administrator and the designers noted that it is important to deliberately base a PharmD programme on learning theories. This is supported by Kelly et al. (2016), who suggested that implementing relevant pedagogical frameworks in student simulation exercises in undergraduate nursing programmes enriched their learning experiences and understanding about their professional practices, as well as that of other healthcare members. It can be argued that the effectiveness of pedagogical frameworks is important to other health professional programmes, which adopt similar teaching strategies, such as experiential learning. Kelly et al. (2016) concluded that these pedagogical frameworks are underpinned by learning theory, which helps programme designers reduce the "theory-practice gap" and students transfer of learning from theory to practice, as well as the development of a life-long learning culture.

In line with this, Botma et al. (2015) suggested that conceptual frameworks are fundamental in the design of professional education programmes, and consequently developed a conceptual framework underpinned by constructivist learning theory. This framework suggests that learning in the workplace is an important component of the design of education programmes. They added that learning in the workplace should be planned and organised by the educational programme itself, rather than the service provider. Botma et al.'s (2015) framework suggested that the transfer of learning is influenced by student characteristics, workplace culture, and educational design, which again emphasises the importance of the educational programme design in the overall learning experience of students. Holden et al. (2015) highlighted the significance of developing a curricular framework based on learning theory, such as CoP theory. This



framework should focus on student learning, be applicable to any discipline in health education, and should have clear guidance for evaluation and implementation strategies.

Interestingly, the encouragement to reconsider the design of health professional programmes is not a recent movement in healthcare education research. Edmond (2001), for example, called for a vital reform in nursing education through cross-disciplinary educational research. Edmond's (2001) research aimed to develop and apply models of nursing education that recognised the importance of professional clinical practice, the role of staff nurses in student learning and the collaboration between education programmes and practice sites. Until now, however, research in healthcare education has continued to discuss solutions for the same problem: preparing students for the accelerated demands of healthcare professional practice. This problem is associated with the unavailability of resources, a lack of collaboration between education programmes and service providers, limited alignment between instruction and assessment, and the lack of a unified model for designing education programmes, as discussed in Section 2.9.

It can be argued that the recognition of problems associated with education programmes, and the significance of learning theory in solving these problems is the first important part of the solution. All interviewees in Stage Two acknowledged the significance of learning theory. However, some considered that learning theory should have a role at a later stage, several years after the programme has been established, to ensure the quality of the programme, rather than early in the design stage. Other interviewees thought that learning theories are important for particular components of the education programmes, such as assessment.

The data in Stage Two suggests that there is a lack of understanding, among faculty and preceptors, of learning theory and its important role in programme design, making it difficult for them to consistently align their teaching strategies to the programme's pedagogy. This lack of understanding contributes to the disconnect between learning theory and practice, and the associated consequences observed in Stage One. As the data suggests, it is vital for those teaching in the PharmD programme to understand the potential role of learning theories in improving the overall programme. Furthermore,

understanding the role of learning theories is significant for creating greater consistency between theory and practice in the areas of curriculum, teaching strategies and, more particularly, in assessment, and in creating integration between theoretical knowledge and real practice. It is also important that the PharmD programme takes responsibility for preparing preceptors for their roles as educators and teachers in the practice sites. This finding is supported by Gonczi's (2013) discussion of professional education, which argued that in spite of continuous efforts to integrate theoretical courses and the clinical placements, placements are still not integrated with the curriculum. This lack of integration results in students learning solely from preceptors at practice sites, who are not trained as educators, without the advantage of interacting with university faculty. Gonczi (2013) claimed that those preceptors usually teach students as they were taught when they, themselves, were students, which is problematic. Gonczi's (2013) findings are clearly applicable to the QU PharmD programme, because the lack of integration was a noted issue in Stages One and Two.

Finally, Stage Two data suggests that solving problems associated with the culture of pharmacy education is challenging and that, thus, it could not happen overnight. Instead, a critical mass of pharmacy educators should be established to identify problems in pharmacy education and solve them through the effective and comprehensive use of learning theories. Gonczi (2013) called for a university-practice site partnership to enhance student learning and preceptor development and to build up the strong organisational capacity of academics and practitioners to better serve students and practitioners learning, and to meet healthcare demands.

Drawing on the discussion of the findings of Stage Two, which proposes a disconnect between learning theories and educational practice in the QU PharmD programme, and based on the literature review presented in Sections 2.7, 2.9.3 and 2.9.4, which suggests that CoP is a relevant theory for a PharmD programme, it is appropriate to examine the implications of the proposed disconnect in the curriculum, teaching strategies and assessment through the CoP theory lens. This examination will facilitate the formation of a case study-developed theory about the role of learning theories in educational practices. In the following stages of this research a CoP framework is therefore developed and used to suggest solutions for pharmacy education programmes, focusing on the QU PharmD programme.

#### **4.9. Summary of chapter**

This chapter presented the findings of Stages One and Two of this research, where Stage One aimed to explore the perceptions of different stakeholders of the PharmD programme, and Stage Two aimed to examine the potential disconnect between learning theories and educational practices in the QU PharmD programme. After presenting the findings of FGs and the preliminary review of documents in Stage One, a description of the development of this exploratory stage into further stages was discussed. After presenting the findings of Stage Two, some of the key findings were discussed and linked with the educational literature. In the following chapter, an innovative analytical framework will be created, based on the researcher's theory of choice for the PharmD programme, CoP, as discussed in Sections 2.7 and 2.9.4.

## **5. Chapter Five: Stage Three: The CoP framework.**

### **5.1. Introduction**

In the previous chapter, the findings of Stages One and Two of this research were discussed. These findings proposed a disconnect between learning theories and educational practices in the QU PharmD programme. The proposed disconnect suggested the need for a more detailed review of the implications from a CoP learning theory perspective, as this is the theory deemed by the researcher to be appropriate for the PharmD programme. To examine this disconnect, a CoP-based framework was created.

This chapter begins with a definition of the CoP framework, its rationale, and description of the methodology of Stage Three. This is followed by the presentation of the different sections of the CoP framework. The chapter ends with a summary of the framework, indicating its utility.

### **5.2. Summary of Stage Two and rationale for Stage Three**

The findings in Chapter Four identified some important pedagogical issues, and therefore supported concerns regarding the possible theory-practice disconnect. Interviewees supported the importance of deliberately basing a PharmD programme on learning theories, and therefore a strong need surfaced to examine the implications of the disconnect between learning theories and practice in the curriculum, teaching strategies and assessment in the QU PharmD programme.

An investigation into different learning theories was initiated, as discussed in Sections 2.3, 2.7 and 2.9.4. Based on this extensive reading for different theories and paradigms, evidence suggested that the CoP is a suitable theory for application to the PharmD programme. However, it was recognised that a clear, comprehensive and detailed CoP framework or model to guide the design or analysis of a professional programme was

lacking. Consequently, the decision was taken to develop an innovative theoretical CoP-based framework comprising curriculum (C), teaching strategies (TS) and assessment (A).

These elements were selected because they represent the education process pillars that need to be conceptualised in detail in a learning theory or paradigm. The reason for defining C, TS and A as education process pillars was that they are identified in the literature as the three key aspects of educational process (Pellegrino, 2006). Also, Streveler, Smith and Pilotte (2012) discussed various models for integrating the content, assessment, and delivery in engineering education, and argued that this integration is fundamental for innovation and the redesign of engineering education. Therefore the researcher decided, after discussion with peers in pharmacy, education and other disciplines, that “Education Process Pillars” was an appropriate descriptive title.

The development of the innovative theoretical CoP-based framework necessitated reviewing relevant literature, to conceptualise the curriculum, teaching strategies and assessment in the theory. It was clear from this review that the focus of the literature was primarily on the conditions that should ideally exist to enable the application of CoP theory in an educational programme – enablers. The literature also emphasised challenges that hinder the application of CoP theory. It also paid attention to the specific outcomes to be achieved from the application of CoP theory. The developed CoP framework was therefore expanded to include enablers (E), challenges (CH) and outcomes (O) as well as the education process pillars (C, TS and A).

### **5.3. Research framework**

This stage contributes to answering the overarching research question of this study,

How have learning theories influenced the design and implementation of the QU PharmD programme?

by answering the third research question:

How does the Communities of Practice (CoP) theory influence the instruction, curriculum, assessment and, ultimately, student experiences?

Figures 5.1.a-b illustrate the stages of this research and suggests that the social constructivism interpretative framework influenced the development of the CoP framework, as mentioned in Section 3.4. It also suggests that particular emphasis is placed on constructivist and social theories of learning, as mentioned in Section 2.3.7.

Figure 5.1.a. Stages of research

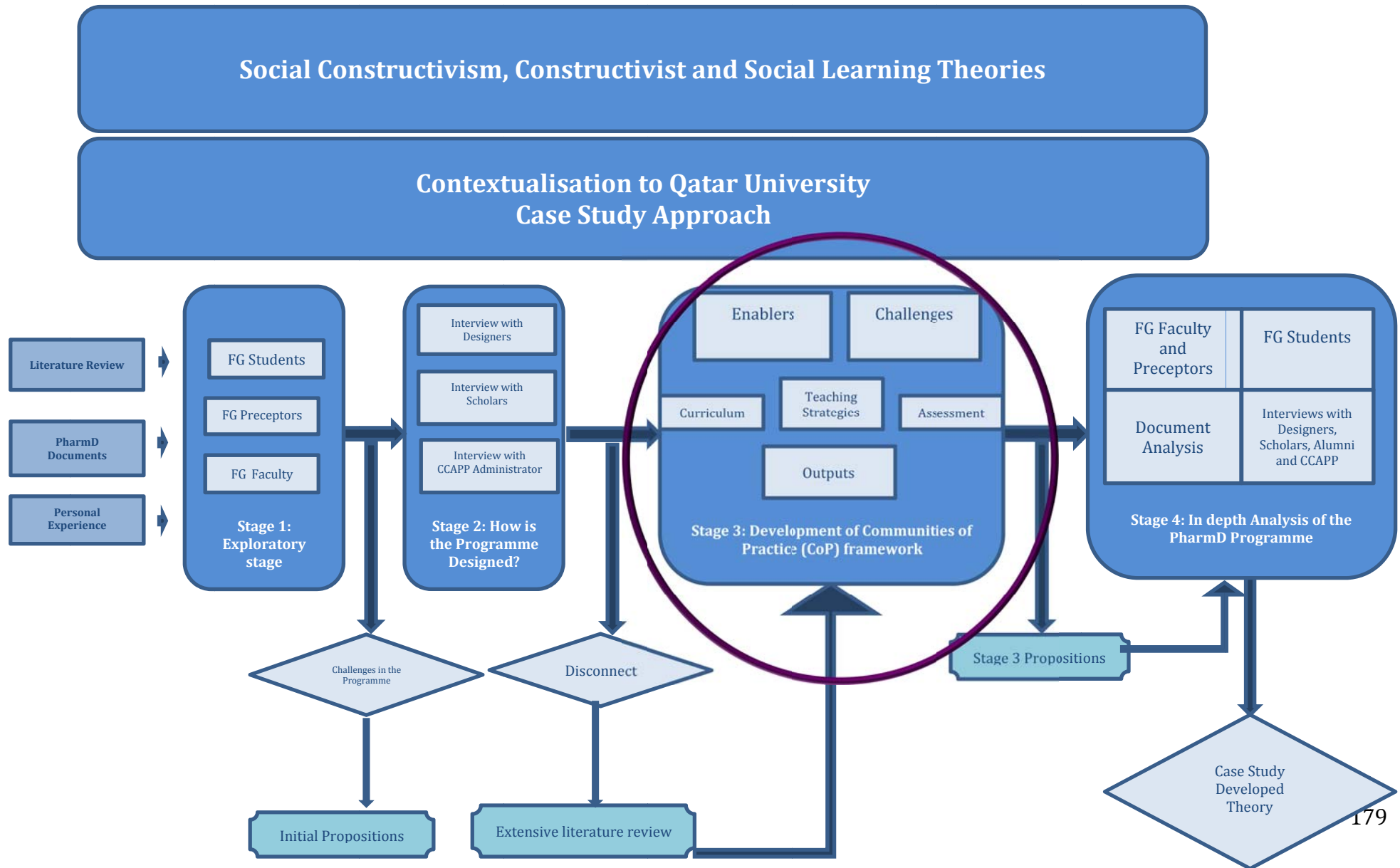
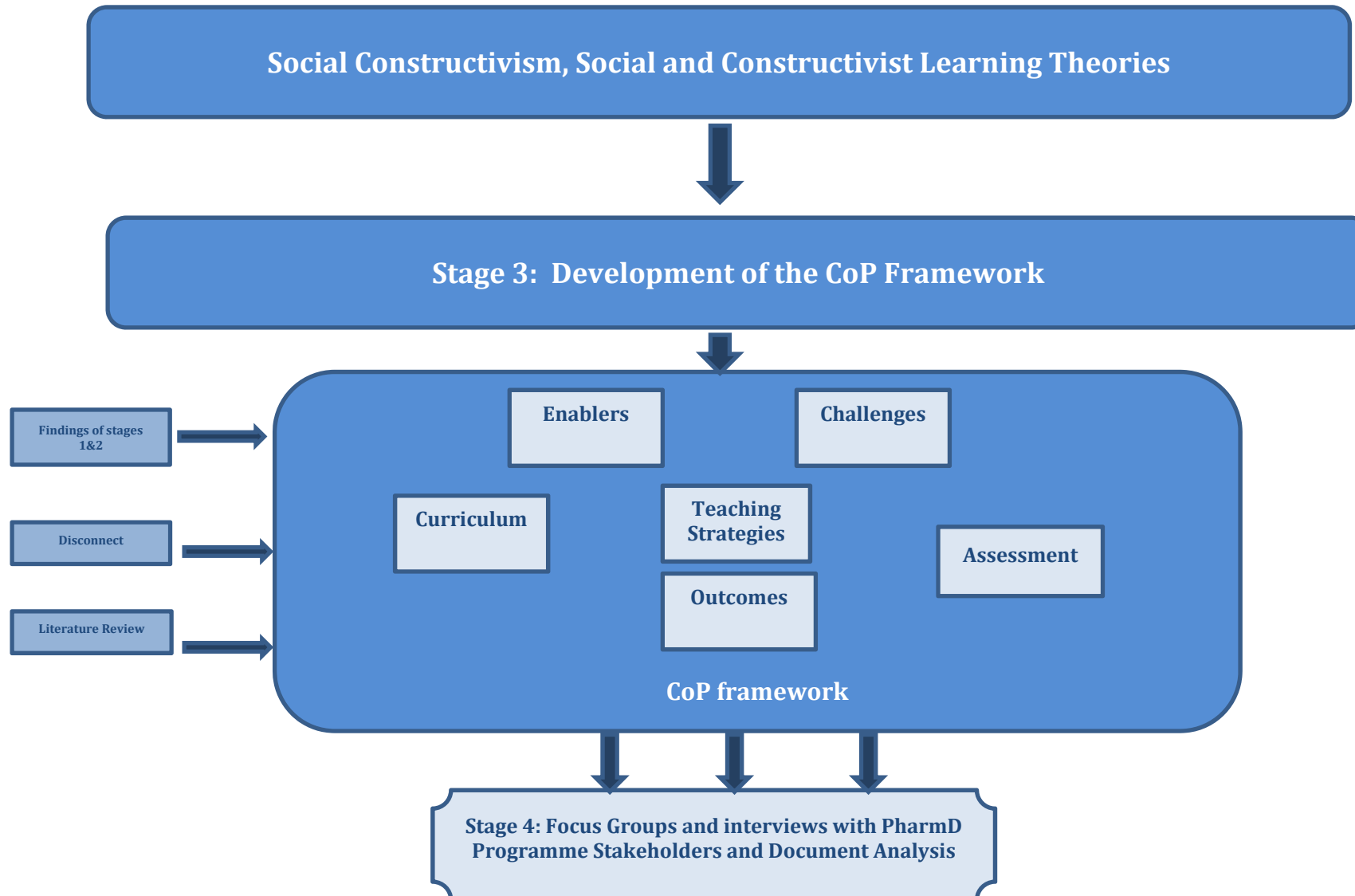


Figure 5.1.b. Stage three





## **5.4. Definition of CoP framework**

A framework is a basic hypothetical description of a complex conceptual structure that contains a set of ideas, rules, or beliefs. This structure underlines a system of processes and agreements, in order to establish the system's operations and develop them, or to plan or make decisions based on them (Cambridge Advanced Learner's Dictionary & Thesaurus, n.d.; English Oxford Living Dictionaries, n.d.; Macmillan Dictionary, n.d.). In this context, the CoP framework developed in this research contains ideas and concepts from CoP theory, aiming to establish a CoP-based education system, and to develop an alignment between CoP learning theory and educational practices.

## **5.5. CoP framework development process**

The CoP framework comprises six main sections, each having several important elements aligned to it, however, these sections were not found 'as is' in the literature, nor was the literature originally divided based on educational process pillars. This stage of research built the main sections and subsections of the innovative theoretical CoP-based framework, through a rigorous method and a lengthy procedure.

The rigorous development method was based on a thorough review of the literature using the Matrix Method (Garrard, 2013). According to this method, a literature review master folder is electronically created, which contains four sub-folders. The first folder is the paper trail folder, which contains records of the search process, keywords, and databases used. The second folder is the document folder, which contains the electronic documents used in the review, such as the PDF documents of articles or thesis. The third folder is the review matrix folder, which is the most important folder, because it comprises a structured abstract of selected articles, represented in a table that summarises the reviewed documents. The rows of the table represent the selected documents, and the columns represent the major information about these documents, such as: the names of the article, author/s, journal, publication year, description of the documents, and summary of key points of interest. The review

matrix offers the researcher flexibility in deciding about the major points to be highlighted in the review matrix columns. The fourth folder is the synthesis folder, which contains synthesised drafts of the selected points of interest, categorised according to the different sections of the CoP framework.

The lengthy development procedure involved several steps. Firstly, an extensive literature search about CoP theory in healthcare education was conducted, using a range of academic databases including PubMed and ERIC, as illustrated in Appendix 2.1. To increase the potential for identifying all the relevant articles, the references cited within selected articles were researched, and their authors were contacted, to garner further recommendations regarding relevant literature. Also, notifications were requested from PubMed and ERIC about new articles containing utilised keywords, to ensure that most up-to-date references were included. To avoid overlooking important references, several renowned healthcare education scholars, particularly in pharmacy education were consulted to determine whether any important references had been missed. For example, a pharmacy education scholar at the University of Waterloo, Canada, who was working in restructuring the PharmD rotations in their programme based on CoP learning theory, shared a list of articles about CoP in healthcare education with the researcher. Most of the shared articles were in the researcher's list of articles, which confirmed the comprehensiveness of the search. Overall, the development of the CoP framework drew on the work described in fifty articles and five PhD dissertations.

Secondly, these articles have been critically read, and only those considered, by the researcher, sufficiently credible and reliable to merit inclusion were selected to be used and synthesised into relevant ideas in the CoP framework. Thirdly, a table was created as a review matrix of these key sources to chronologically indicate key points of interest that are essential for the development of the CoP framework. Hence, the CoP framework chapter comprises a presentation and discussion of ideas and concepts that are considered descriptive of CoP theory, however, some of these key sources have been critically discussed in Chapter Two.

Subsequently, six tables were created, reflecting the six sections of the framework, to organise the reading, analysis and synthesis of those documents. Each important

concept was assigned to one of the six tables in the framework according to the researcher's own assessment of relevance. For example, if a concept was related to curriculum in terms of learning content, scope, breadth, design, sequence, knowledge, skill or learning goals, then it was assigned as 'curriculum'. If it was connected to instruction, delivery, teaching methods, learning activities, mentoring and training, it was assigned as 'teaching strategies'. If it was associated with evaluation, appraisal, learning outcomes attainment, student achievement, and competencies, then it was assigned as 'assessment' (Pellegrino, 2006). This assignment of the concepts of the tables were revised extensively, edited, refined and peer reviewed, for the goal of achieving a consensus on the relevance of each element to the CoP framework's sections. Finally, when the framework sections were written, a peer review was requested from pharmacy and other healthcare education scholars regarding the relevance, logic and applicability of the framework. Based on this peer review process, the framework was further revised. The review matrix that lists the definitive sources used in developing the CoP framework is in Appendix 2.3.

The developed CoP framework is based on the researcher's interpretation of the literature, her experience in the academic field and in quality improvement projects, and on the peer review process conducted by scholars in pharmacy, health and nursing education. This utilisation of the researcher's experiences, and interpretations of literature is consistent with Fung-Kee-Fung, Boushey and Morash's (2013) approach to developing a regional CoP-based platform for large-scale collaboration in cancer surgery. In their research, they considered author opinions, interpretations of literature, and experiences as tools for developing the CoP-based platform. In spite of the similarity in the development approach, however, the objectives, sections, and use of the CoP framework in this research are different from their regional CoP-based platform.

Before detailing the elements of the framework, it is important to note that the framework should not be considered a static entity that is complete. Rather, it is a process that is constantly in flow and adapts and evolves over time, as specific contexts and circumstances change, and as research in the health education field progresses.

## **5.6. CoP framework sections**

In what follows, the elements in each of the CoP framework's six components were identified. Figures 5.1-9 were developed by the researcher as part of this research, and were presented in different sections of this chapter. Furthermore, examples about some CoP elements were given, where possible, to provide a comprehensive explanation of the framework, and its potential use in analysing and engineering PharmD programmes. Figure 5.3 is the comprehensive and detailed CoP framework developed by the researcher as part of this research, and hence an expanded folded graphic version of it is illustrated in Appendix 6.

The CoP framework is composed of the following sections.

### **5.6.1. Influencing factors:**

- A. Ideal conditions for CoP implementation/enablers
- B. Challenges that might hinder implementation

### **5.6.2. Education process pillars:**

- A. Curriculum
- B. Teaching strategies
- C. Assessment

### **5.6.3. Outcomes**

Figure 5.2 The CoP framework (summarised)

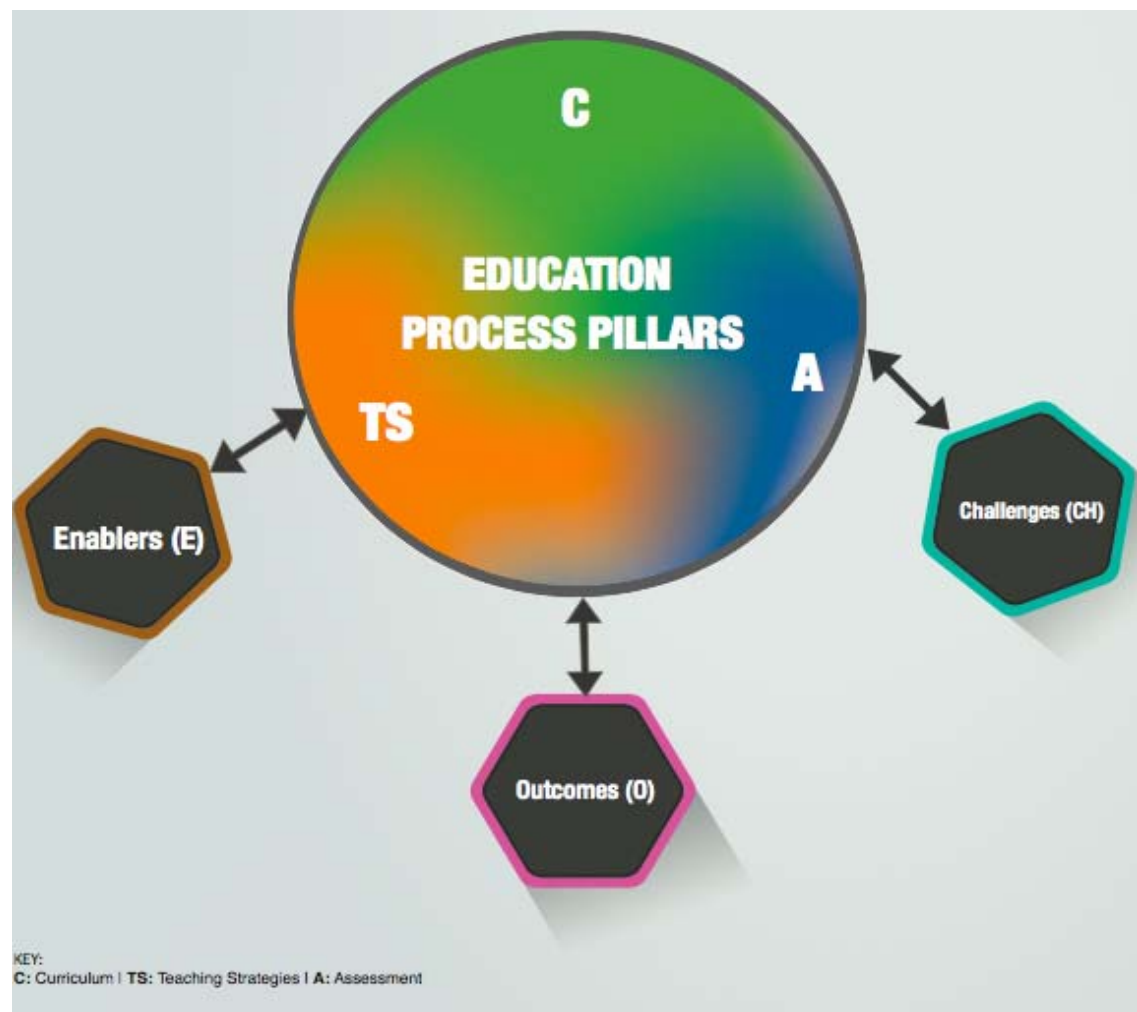
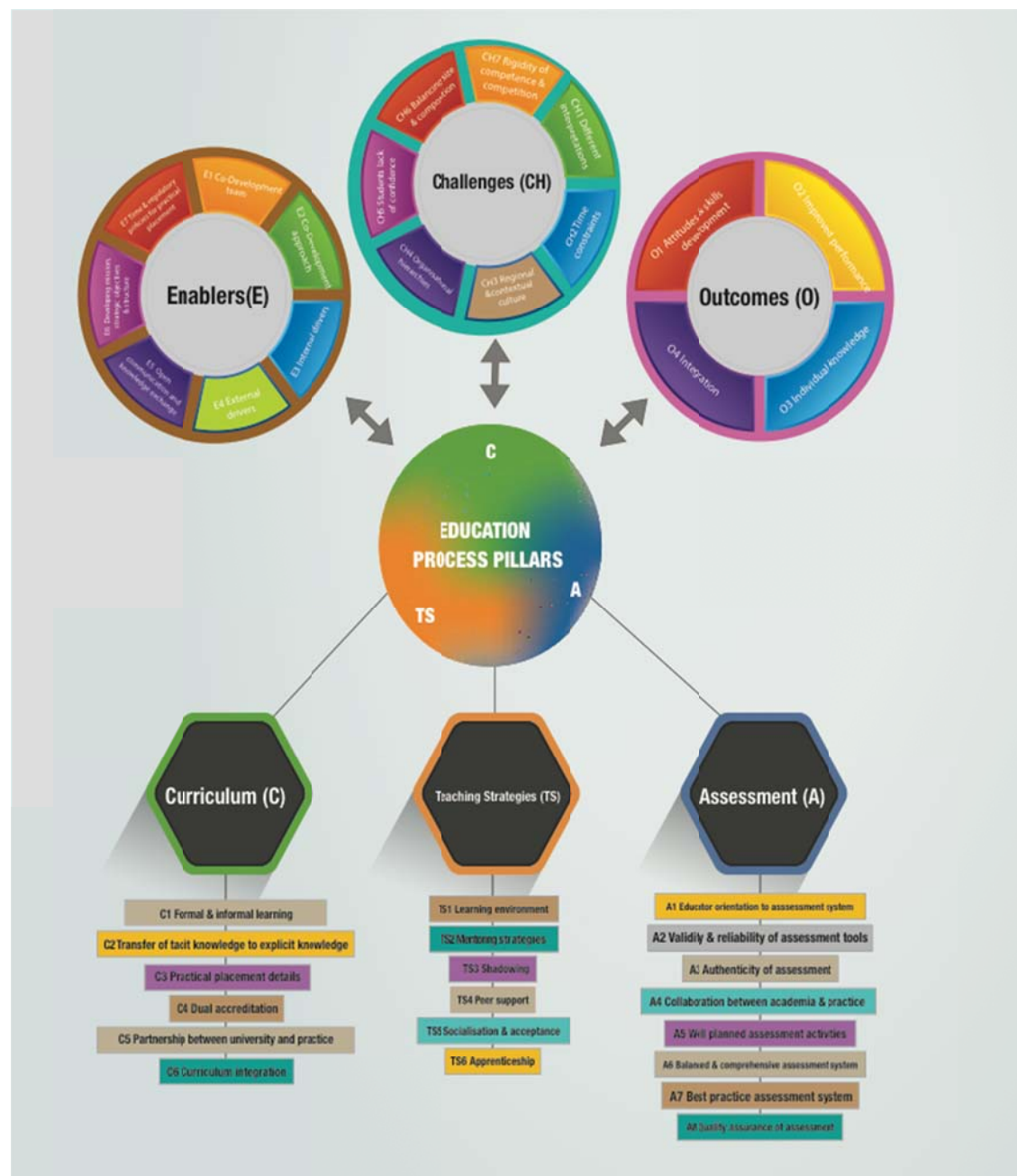


Figure 5.3 The CoP framework (detailed)



### 5.6.1. Influencing factors

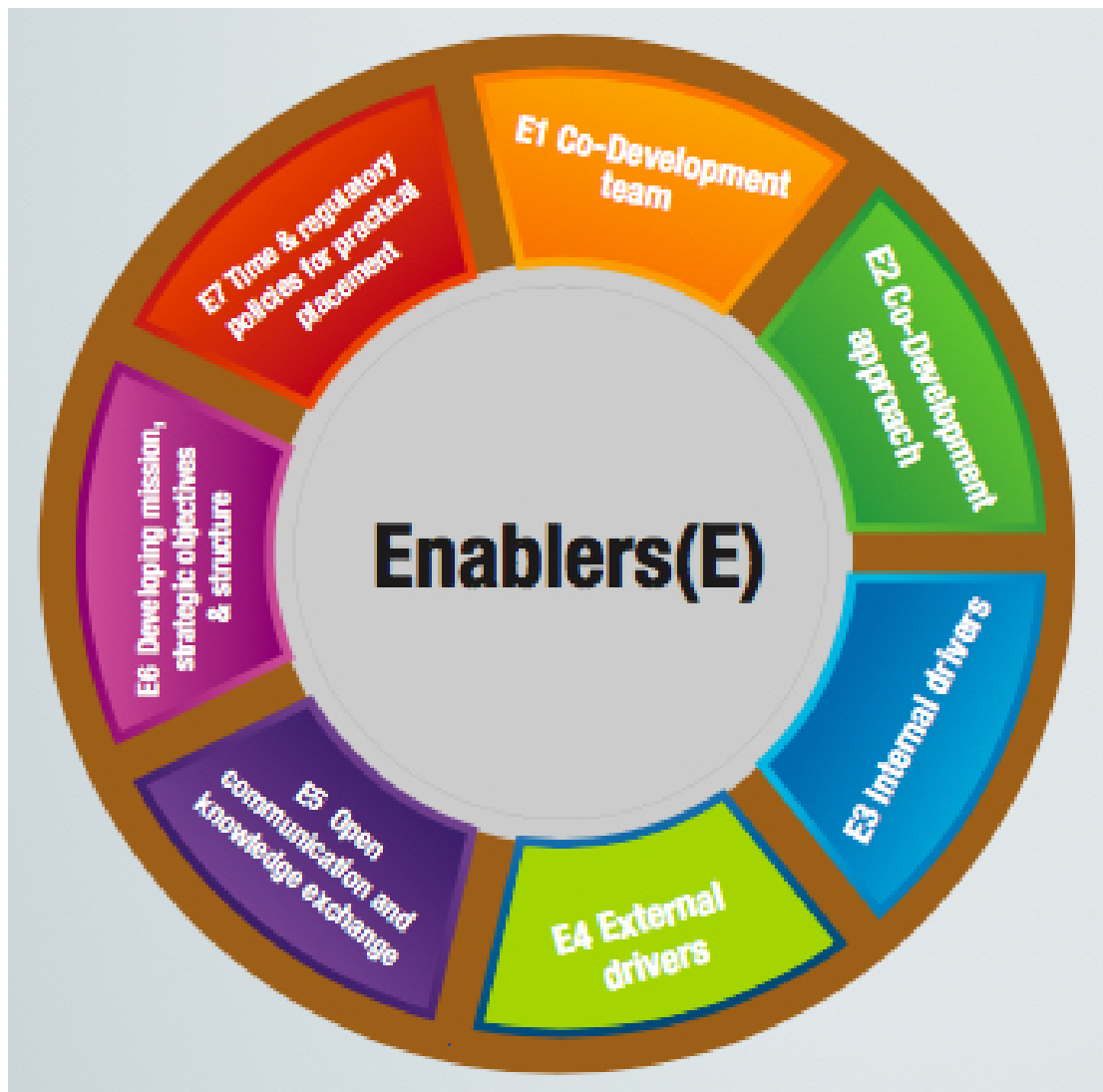
#### *A. Ideal conditions for CoP implementation/enablers (E)*

Enablers are defined as those conditions which need to be met to ensure a desired outcome. If the right conditions/enablers required for any academic programme are in place, such as an open communication environment, the programme will have a better chance to succeed in its aim of producing well-prepared graduates. It is vital that several ideal conditions/enablers exist in an educational programme, to provide the best possible context for the CoP to become an integral part of the programme. The researcher assumed a two-way relationship between enablers and education process pillars, such that they influence and affect each other in a dynamic manner. The reason for this assumption is that the successful implementation of the education process pillars according to a CoP framework does not happen at once, and is influenced by the enablers. Similarly, the existence of enablers as ideal conditions for implementation happens gradually and is influenced by the closeness between the current practices of education process pillars and the CoP framework. The enablers are illustrated in Figure 5.4 and Table 5.1. It is worth noting that the subsections of all CoP framework sections, including enablers, are explained according to their priority, which was determined by their perceived relevance, importance and contextual applicability. This is based on the researcher's review and understanding of the literature, however, this priority scheme might vary in different contexts and from the perspective of different researchers.

Table 5.1 Enablers (E)

Enabler	Code
Co-development team	E1
Co-development approach	E2
Internal drivers	E3
External drivers: Integration with governmental drivers and accreditation standards	E4
Open communication and reciprocal knowledge exchange	E5
Developing an organisational mission, strategic objectives and structure	E6
Time requirement and regulatory policies for practical placement	E7

Figure 5.4. Enablers (E)





### E1. Co-development team

A co-development team should be formed to develop academic programmes, and through the application of scientific and technical knowledge, develop a focused yet comprehensive CoP plan. The participation of key members and representatives from all CoP members ensures a thoughtful development, planning and implementation process (Fitzsimmons, 2007), and makes this enabler the most important. Each member of the team should understand and embrace their clear responsibility while being treated as a valuable member of the team (Thrysoe et al., 2010). Key CoP members include a consultant, a community coordinator, a leader, an exemplar, academics, a sponsor (Fitzsimmons, 2007) and a champion (Barnett et al., 2014), as illustrated in Table 5.2.

Table 5.2 Key CoP members in Co-development team

CoP member	Responsibility	Example
CoP consultant	Provides guidance about the CoP and answer unique queries regarding the particular context (Fitzsimmons, 2007).	Educational scholar
CoP team leader	Makes the final decisions about the CoP plans and operations, has administrative authority (Fitzsimmons, 2007).	The Dean of the college or their delegate, or the Director of the clinical department in the practice institution or their delegate.
CoP team coordinator/ team organiser	Participates in meetings, and discussions, shares experiences, and is responsible for meetings coordination activities (Fitzsimmons, 2007; Wenger, McDermott and Snyder, 2002).	Experienced professional
Academic	Ensures that CoP theory is applied within the academic programme and provides feedback about CoP integration (Mayne et al., 2015).	Faculty liaisons
Practice facilitators	Brings “real-world” perspectives to complement the educational process, and exchanges knowledge with academics in areas of assessment, feedback and curriculum design and delivery (Mayne et al., 2015).	Clinical preceptor
Sponsor	Liaises between the organisation’s management and the CoP development team to ensure that the CoP objectives are aligned with the organisation’s strategy (Probst and Borzillo, 2008), and seeks their financial support.	Representative from a funding organisation.
Champion	Is formally appointed or informally recognised to disseminate knowledge, advocate ideas, build relationships, resolve challenges, facilitate agreement and convince various stakeholders about the CoP rationale (Barnett et al., 2014; Soo, 2010).	Popular figure in healthcare education or practice

## E2. Co-development approach

The co-development approach describes the important steps in the design of the CoP, which involve cycles of reflection, planning, benchmarking, execution, and feedback (Fitzsimmons, 2007). These co-development approach cycles are explained in Table 5.3. The duration and frequency of the cycles are affected by the benchmarking processes, the participant needs expressed in their feedback, and the appropriateness of the planning and execution environment (Fitzsimmons, 2007). The development approach is not static and will not be finished or accomplished. Rather, it is a process that is constantly in flow, and adapts and evolves over time as specific contexts and circumstances change.

Table 5.3 Co-development approach cycle

Cycle	Clarification
Reflection	Involves considering actions that took place, to assess them through reflection in and on action (Schön, 1987, cited by Taylor and Hamdy, 2013).
Planning	Involves creating strategies and establishing goals, policies, and procedures for the CoP.
Benchmarking	Involves comparing participant knowledge about CoPs to real outcomes, and learning from others who have gone through the same experience (Barnett et al., 2014).
Execution	Involves implementation of the CoP by carrying out the plans and courses of action (Fitzsimmons, 2007).
Feedback	Involves collecting evaluative information about outcomes, to modify actions, decisions and plans in subsequent stages, and to evaluate CoP outcomes and challenges (Barnett et al., 2014).

## E3. Internal drivers

Faculty members are key internal drivers in CoP planning and implementation because of their direct relationship with, and influence on, the university and students (Barnett et al., 2014). It is important, hence, to address their motivation, enthusiasm and satisfaction by rationally modifying the organisational structure, tenure, promotion, and merit systems, which ultimately encourage their interdisciplinary

connection and accountability. This improves faculty ownership of CoP, and subsequently enables student achievement (Austin and Duncan-Hewitt, 2005).

#### E4. External drivers: Integration with governmental drivers and accreditation standards

The external drivers are the government (Mayne et al., 2015) and accreditation bodies (Evans, Guile and Harris, 2009), such as the CCAPP. Governmental drivers and requirements should be well understood and applied by the academic programme, to secure appropriate support from governmental agencies. Also, the implementation of accreditation standards should be a high priority, to comply with them and achieve accreditation status. Compatibility between professional licensing, accrediting body requirements and course requirements provides an advantage in designing the academic programme, as further explained in Section C4.

#### E5. Open communication and reciprocal knowledge exchange

Open communication within the co-development team and between all members of the CoP is fundamental and has several advantages (Mayne et al., 2015). One advantage is knowledge exchange, which allows experienced academics, students and practitioners to coach each other with relevant expertise based on background and professional experience (Andrew et al., 2009). With knowledge exchange, students are not the only learners in the CoP. Instead, faculty members and preceptors act as co-participants, sometimes demonstrating a lack of knowledge, stepping back from their usual role as experts and at other times showing proficiency (Li et al., 2009a), and developing reciprocal relationships with students, who are peripheral participants (Sayer, 2014). Other advantages of open communication include making rational decisions, providing honest feedback, reducing unfavourable power hierarchies, and driving the professional development of all members (Andrew and Ferguson, 2008).

There are several key factors to securing open communication, such as, mutual trust, respect and open dialogue (Li et al., 2009a) as well as the contributions of all participants to decision-making (Mayne et al., 2015). Utilising all forms of

communication is also fundamental to facilitating open communication, such as active and passive communication (Barnett et al., 2014) and information technology (Li et al., 2009a).

#### E6. Developing an organisational mission, strategic objectives and structure

It is essential to verify that the developed CoP plans and structure are guided by strategic objectives. These objectives must be quantitative, qualitative and operational to guarantee their applicability, suitability and measurement. These objectives must also be aligned with modifications to the departmental structure and with adjustments in the organisation's mission (Duncan-Hewitt and Austin, 2005; Probst and Borzillo, 2008). Alignment of objectives enhances the appreciation of CoP among the management, workers and end-users and ensures they meet the needs of all CoP members. For example, the modification in departmental structure should reflect the integration of science and practice, to enable collaboration across disciplines. The departmental modification should be complemented with adjustments to admission policies, curricula, delivery and assessments (Duncan-Hewitt and Austin, 2005). Also, in developing a CoP-based academic programme, the mission statement should redefine clients and consumers. The client should be any practitioner, with variable expertise ranging from the novice, such as student, to the expert. The consumer should be patients and society, who consume and benefit from the practitioner's application of knowledge and skills. This redefinition of clients and consumers in the mission statement will strengthen the knowledge exchange and mandate the continuous professional development (Duncan-Hewitt and Austin, 2005).

#### E7. Time requirement and regulatory policies for practical placement

The concept of experiential learning, represented by practical placement, should be well planned before CoP implementation. Caring for patients in a health setting (Ranse and Grealish, 2007) and the desire to become a more central participant in the community are the main motivators for student learning in healthcare professions (White, 2010). These motivators are achieved through practical placement, where local knowledge is shared at the point of care delivery (Andrew and Ferguson, 2008).

Time requirements for teaching during practical placements and the regulatory policies to support student responsibilities are key details to be considered to achieve CoP operational objectives. Austin and Duncan-Hewitt (2005) argued that students would be seen as an integral part of the pharmacy workforce if the time requirements for their practical placements in pharmacy were increased. This increase requires a major change to regulatory policies to support more independent work by students and consequently greater accountability, responsibility, and professional role. This increase in responsibility and accountability would be beneficial to both the organisation and to CoP (Austin and Duncan-Hewitt, 2005).

### ***B. Challenges (CH)***

It is important to recognise challenges to the implementation of CoP prior to the planning and implementation phases, so that they are avoided. There is also a two-way relationship between challenges and the education process pillars, so they actively impact each other, and hence, avoiding these challenges is not a simple process and cannot be achieved straightaway. Challenges to CoP implementation are illustrated in Figure Table 5.4 and Figure 5.5.

Table 5.4 Challenges (CH)

<b>Challenge</b>	<b>Code</b>
Different interpretations of CoP theory	CH1
Time constraints	CH2
Regional and contextual culture	CH3
Organisational hierarchies	CH4
Students' lack of confidence in their own abilities	CH5
Balancing size and composition	CH6
Rigidity of competences and competitive environment	CH7

Figure 5.5 Challenges (CH)



### CH1. Different interpretations of CoP theory and subsequent lack of communication about it

Since the 1990s, CoP theory has progressively evolved. In the beginning, CoP concept aimed to provide an understanding of the learning that takes place between practitioners in a social setting of the work setting. Today, there are different ideals and rival models for what CoPs should be, so debate and disagreement are bound to occur (Li et al., 2009a). The gradual evolution of CoP theory has led to a lack of consistency in the interpretation of the CoP concept in terms of defining, developing, applying, and measuring its usefulness and success (Li et al., 2009a). It is therefore essential to have a common understanding of CoP, and of its specific measures and outcomes prior to implementation, and this common understanding should be effectively communicated to all CoP members.

### CH2. Time constraints

Effective CoP implementation requires additional time for CoP members to be actively involved and engaged in effective CoP activities (Roberts, 2006), which might be difficult for some members. Hence, it is important to spread the ownership spirit of the CoP and the responsibilities for different tasks between members, so that they accept this additional load (Kerno, 2008).

### CH3. Regional and contextual culture

CoP implementation is usually more successful in societies with stronger social structures that grow in a sociocultural environment and that value groups, community, harmony, and collectivism (Kerno, 2008; Roberts, 2006). Hence, negative contextual factors in the practice environment, such as professional power, individuality and a lack of institutional commitment may hinder the implementation of CoP (Kislov, Harvey and Walshe, 2011).



#### CH4. Organisational hierarchies

The concept of CoP is usually more effective in organisations that have individuals with similar professions and communication patterns, because functional similarity facilitates problems-solving, knowledge exchange, and open communication (Kerno, 2008). Hence, in hierarchical organisations, employees should be oriented to the fact that CoP is an instrument to increase their personal knowledge and improve organisational performance, and should be encouraged by providing them with success stories about CoP implementation (Kerno, 2008).

#### CH5. Students' lack of confidence in their own abilities

A student's lack of confidence has a strong effect on their transition from the classroom environment to their practical placement (Mayne et al., 2015), which affects their participation in the CoP. Improving students confidence can be achieved by exposing them to the CoP concept early and at different stages of their degree, in an integrated and synthesised fashion, with a gradual increase in responsibilities and exposure. Students' confidence can also be improved by involving them in the setting of goals and expectation, and in self-assessment, as will discussed later in the curriculum, teaching strategies and assessment sections. Improved students confidence neutralises the power distribution between educators and students, increases students' ownership of their learning and enhances the transfer of knowledge in real practice. This ultimately facilitates their movement from peripheral to core participation in the CoP (Austin and Duncan-Hewitt, 2005).

#### CH6. Balancing size and composition

It is important to keep a balance between the number of employees in an institution and the smallest number of members required for maintaining intimacy between CoP members (Sherbino et al., 2010). Adding new individuals to a CoP could possibly reduce its effectiveness, and hence, the advantages of adding new members should be weighed against the disadvantages, till the ratio of existing staff to new entrants is established by experience (Sherbino et al., 2010). In an educational programme, the

number of students placed at any one time in a particular practice site, the number of preceptors, and the duration of placements are important factors that affect each other, as will be discussed further in Section 5.7.2, C3.

#### CH7. Rigidity of competences and competitive environment

In institutions that foster a competitive spirit across organisational units, employees are reluctant to share their efficient practices with one another because they trust their own competence, and do not want to learn from others (Probst and Borzillo, 2008). This negatively affects the reciprocal knowledge exchange among practitioners, students and academics, which might lead to rigidity of competence, and hinder CoP implementation (Probst and Borzillo, 2008). To reduce the impact of this challenge, CoP members should be encouraged to share knowledge and experience for the purpose of competence development, because this is a key part of CoP success.

It is worth noting that competence in this context means the ability of a person to do a certain job effectively and efficiently, rather than competency, which is the checklist of structured predetermined behaviours representing specific knowledge, skills and attitudes that aim to direct professional practices (Owen and Stupans, 2009).

#### **5.6.2. Education process pillars**

The education process pillars interact with each other in a nonlinear fashion, which means that none of these pillars precedes the others in sequence and that all are equally important to the education process. They have thus been presented in Figures 5.2 and 5.3 as a wheel. Some key extra-curricular activities are discussed under relevant sections of the framework rather than as a separate element, because they do not directly align with CoP theory.

### ***A. Curriculum (C)***

Key elements that must be considered during the design of a CoP-based curriculum are presented in Table 5.5 and Figure 5.6. Although some of these elements maintain common ground with other learning theories and pedagogies, they are discussed in this section in the context of CoP.

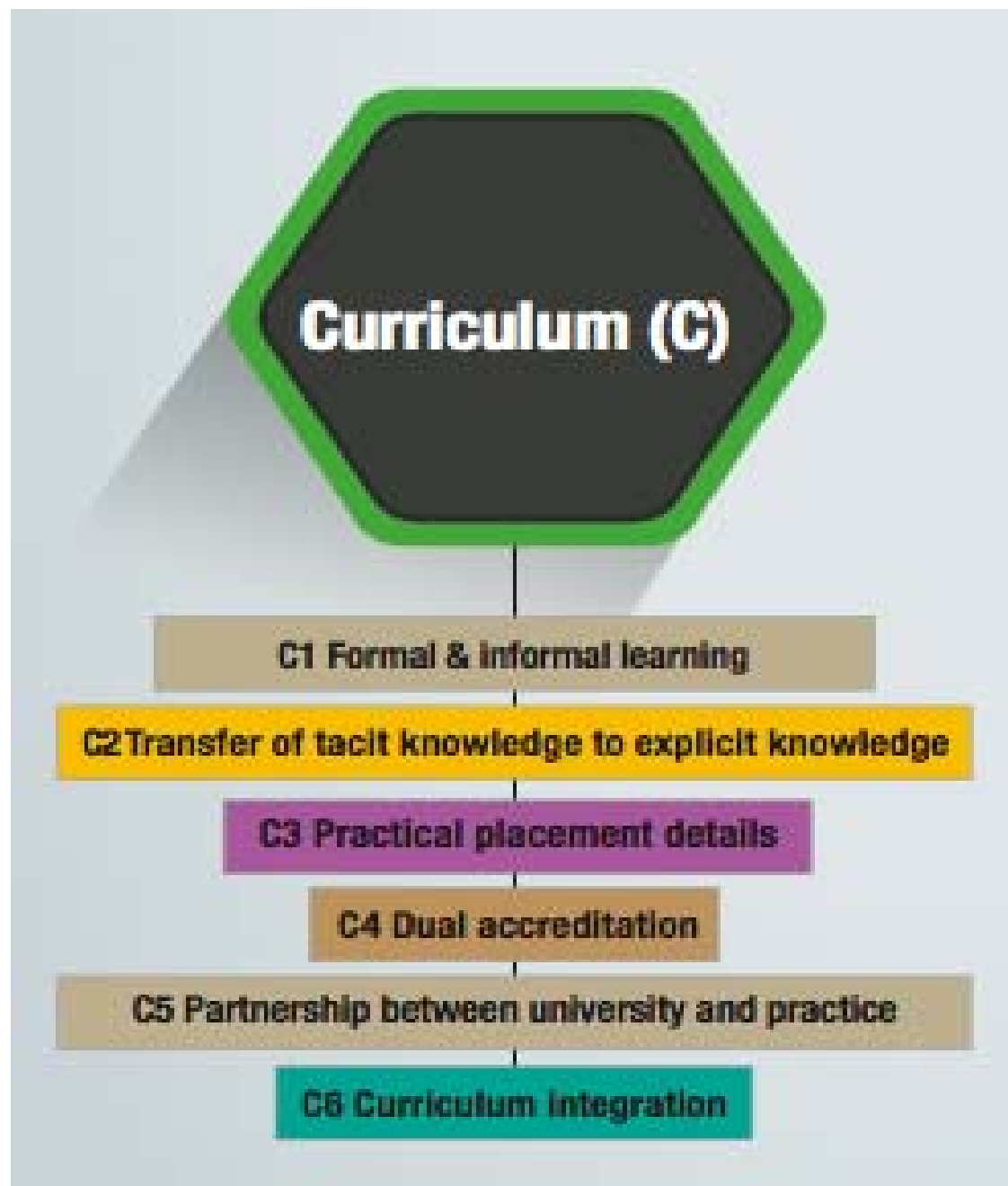
It is important to define the term ‘curriculum’ before explaining different concepts under this term. Different definitions have been proposed over the years based on the conceptions of the educational system, processes, outcomes, school function, and types of school products (Offorma, 2016). For example, the formal curriculum planned ahead of time is defined as the design or blueprint, which guides the teaching and learning in an education programme, aiming to achieve the expected changes in the learner’s behaviours (Offorma, 2016). Anwukah (1992) defined a curriculum as the planned formal learning and training activities that aim to achieve a set of predetermined competencies. Those predetermined competencies are affected by the specific culture and society of learners. Some medical education literature has also suggested that a curriculum is broader than the content or syllabus. Instead, ‘curriculum’ refers to content, education strategies, learning outcomes, learning opportunities, educational environment, and assessment (Dent and Harden, 2013). Mai (2015) argued that the traditional definition of curriculum focuses on the responsibility of teachers in organising knowledge, while the modern definition of curriculum focuses on the overall learning experience of students, which places students at the centre of their learning, and gives teachers guiding roles only. A curriculum extends beyond the written contents in a syllabus, into course design, teaching strategies, assessment, and access to information, and is thus composed of what is written and not written (Mai, 2015).

In this PhD thesis, however, ‘curriculum’ refers to the content, syllabus, learning outcomes, planned formal and informal learning, and extra-curricular and learning activities provided to achieve professional competence. Other important elements mentioned in previous definitions, such as teaching strategies and assessment, were considered as individual components of the education process pillars in addition to the curriculum, rather than subsection of the curriculum.

Table 5.5 Curriculum (C)

Curriculum element	Code
Formal and informal learning	C1
Transfer of tacit knowledge to explicit knowledge and recontextualisation	C2
Practical placement duration, sophistication and alignment to learner needs	C3
Dual accreditation	C4
Partnerships between the university and practice sites	C5
Curriculum integration	C6

Figure 5.6 Curriculum (C)



### C1. Formal and informal learning

Eraut (2004) argued that workplace learning occurs formally and informally and the roles of both are complementary and essential for effective practice and student competence (Allan and Smith, 2010). Hence, formal and informal learning are the most important elements in the curriculum section because the presence of this element affects the remaining elements in the curriculum.

Formal workplace learning is intentional and has clear and identifiable outcomes, while informal learning is implicit, unplanned, unstructured, and is dependent on situational opportunities (Li et al., 2009a). Formal learning takes the form of traditional teaching by an instructor, while informal learning in the workplace emerges through interaction and socialisation with other students and mentors during practical placement. The importance of informal learning in a CoP makes the role of mentors significant and requires that they develop a complex understanding of various teaching strategies and of the implications of both formal and informal learning (Allan and Smith, 2010).

### C2. Transfer of tacit knowledge to explicit knowledge and recontextualisation

When placing students in practical placements, the situational learning model of CoP theory is applied, which leads to knowledge production and sharing (Mayne et al., 2015). This produced and shared knowledge could be either tacit or explicit. Explicit knowledge is available in a semantic, realistic and representative way, which allows it to be shared and exchanged. Tacit knowledge, on the contrary, is latent and concealed, and it has variable applications and presentation, which makes its transfer and exchange difficult (Garrow and Tawse, 2009).

Garrow and Tawse (2009) argue that learning takes the form of a cycle between four styles: the first is socialisation, where knowledge is converted from tacit to tacit knowledge by bringing the learner's previous experience to the CoP; the second is externalisation, where knowledge is transferred from being tacit to being explicit; the third is combination, where knowledge is transferred from being explicit to being explicit. The fourth is internalisation, where knowledge is converted from being

explicit to being tacit. One central goal of CoP is the transfer of knowledge that is tacit into knowledge that is explicit through the socialisation and the externalisation components of the learning cycle. In socialisation, knowledge is converted from tacit to tacit knowledge by bringing learner's previous experience to the CoP and then by externalisation, knowledge is transferred from tacit to explicit. The learning cycle concept aligns with that of situational learning in the CoP, because learning occurs when an individual's internal thoughts are exposed to external analysis through social interaction, which adjusts those thoughts (Garrow and Tawse, 2009).

Another central goal of CoP is knowledge recontextualisation as students move between the university classroom and workplaces (Cope, Cuthbertson and Stoddart, 2000; Evan, Guile and Harris 2009). Knowledge recontextualisation implies that theory and practice possess a reciprocal relationship, whereby theory learnt in the classroom shapes and informs practice in work-based contexts, while practice shapes and informs theory and educational approaches. This requires an integration of the content-based and work-based elements of a curriculum (Allan and Smith, 2010), and students' engagement in reflection (Evan, Guile and Harris, 2009).

Some barriers prevent learning recontextualisation and reflection from happening. In nursing, for instance, practice-based learning is not reflected in the pedagogies taught in the classrooms. The theory coming from reflective practice is not as highly valued as the evidence derived from randomised controlled trials, which are based on scholarly scientific evidence. Therefore, curriculum, assignments, educational practices and the practice community should emphasise the importance of recontextualisation (Cope, Cuthbertson and Stoddart, 2000). This is achieved by ensuring that scientific evidence is not privileged over recontextualisation and reflective thinking, and by giving students the opportunities to engage in reflection and recontextualisation (Allan and Smith, 2010).

### C3. Practical placement duration, sophistication and alignment to learner needs

There is debate about the appropriate balance between the theoretical and practical components in an educational programme, because, unfortunately, the details of practice placements are often not sufficiently considered during curriculum planning and design (White, 2010). In curriculum development, the duration of practice placements should be properly balanced between short placements, where students are observers, and extra-long placements where students are prematurely treated as practitioners (White, 2010).

Another important element to consider when planning for the practical placement is the gradual increase of sophistication of tasks and responsibilities associated with different placement levels, based on the learner's skills. When the complexity of tasks increases, students become more central to the practice and less of a burden to mentors, which improves their confidence, as mentioned in Section CH5 (Duncan-Hewitt and Austin, 2005). Also, curriculum design should consider students' orientation to the benefits of practical placement that is based on CoP theory, and students' reflections on their goals and needs. Adult learners should have ownership of their learning to become life-long learners, as discussed previously in Section CH5 (Fitzsimmons, 2007; White, 2010).

### C4. Dual accreditation

The compatibility between professional licensing, accrediting body requirements and course requirements allows for dual accreditation. This means that professional qualifications are aligned with licensing, accreditation and programme requirements, for serving a learner's best interests (Evans, Guile and Harris, 2009). Dual accreditation necessitates that professional licensing bodies and accrediting agencies work with the academic programme in preparing compatible and aligned course requirements, as mentioned in Section E4. The alignment should occur throughout the programme, especially in areas of entry-to-practice competencies, practical assessment requirements, relicensing requirements, and life-long professional development (Mayne et al., 2015).



#### C5. Partnerships between the university and practice sites

The integration of academia and practice through practical placements and subsequent engagement between academics and practitioners is fundamental to CoP (Cope, Cuthbertson and Stoddart, 2000; Wenger, McDermott and Snyder, 2002). This engagement results in the collection of resources, skills and knowledge, experiences, tools for addressing problems, and for achieving a dynamic learning environment (Andrew and Ferguson, 2008; Wenger, McDermott and Snyder, 2002). The collected resources are essential for greater productivity in research, education, clinical practice and customer experience (Hean et al., 2013).

The integrated environment facilitates curricular change by having committed academics engaged in curriculum design and professional development alongside practitioners. The goal of the integrated environment is improvement in practice and the dissemination of knowledge, along with the development of well-planned practice-based learning (Andrew and Ferguson, 2008).

#### C6. Curriculum integration

Curriculum integration is an approach to making the learning experiences from various disciplines consistent, relevant and interrelated, to facilitate higher-order learning, apply knowledge to solve complex problems (Pearson and Hubball, 2012), and make students integrative thinkers (Ratka, 2012). Husband, Todd and Fulton (2014) added that an integrated curriculum represents relationships between various disciplines, which increases the value of these disciplines, through the application of an appropriate learning and psychological theory.

This integration requires faculty members from different disciplines to communicate and contribute to the curriculum and teaching process. Practical placements in pharmacy are an example of an integrated curriculum where fundamental science courses are merged with pharmacy practice courses, which allow students to apply all parts of the curriculum in professional practice. However, the sophistication of a practical placement, the expectations and skillset requirements should be gradually increased, so that by the conclusion of the final rotation, students are fully prepared to

deal with real practice (Austin and Duncan-Hewitt, 2005). The reason for providing the example of practical placement as an integrated curriculum is that the practice-based element of the curriculum has a stronger alignment with CoP theory.

The literature from the UK, USA and Canada has proposed several integration models that curriculum designers could customise, based on their needs. Examples of integration methods are, Harden's (2000) eleven-step integration ladder, Benor's (1982) horizontal and vertical integration, Harden's (1999) spiral curriculum model, and organisational themes (Husband, Todd and Fulton, 2014). The choice of one integration method over another depends on the administrative, organisational and departmental structure and the needs of that programme.

### ***B. Teaching strategies (TS)***

Teaching strategies are illustrated in Figure 5.7 and Table 5.6. There are some similarities in curriculum delivery among learning theories, and therefore this section describes the teaching strategies that suit CoP theory. It is important to note that this section focuses on the delivery of the practice-based element of the curriculum (practical placement) and not on the non-practice based element (classroom lectures). The reason for this focus is that the practice-based element of the curriculum in a professional educational programme has a stronger alignment with CoP theory; however, in a successful educational system, both elements complement each other.

Table 5.6 Teaching strategies (TS)

Teaching strategies element	Code
Practical placement environment: (or learning environment)	TS1
Mentoring strategies	TS2
Shadowing	TS3
Peer support	TS4
Socialisation and acceptance	TS5
Apprenticeship	TS6

Figure 5.7 Teaching strategies (TS)



### TS1. Practical placement environment (learning environment)

Effective learning environments are fundamental in constructing students' professional identity, which results in the creation of a shared identity among members (White, 2010). Several factors are important to ensuring an effective learning environment (Sayer, 2014).

First, the relationships and the interactions that take place between students, mentors and healthcare professionals are important for ensuring an appropriate learning environment (Field, 2004). For example, nursing students tended to drop out of their nursing studies as a result of negative experiences when interacting with other health professionals (Thrysoe et al., 2010).

The second element for improving the learning environment and the motivation to learn is ensuring that learners have the feeling of belonging to the community (Thrysoe et al., 2010). The feeling of belonging is characterised by connectedness, friendly and mutual engagement in each other's personal interests during leisure time, which are seen as informal learning settings (Levett-Jones and Lathlean, 2008). The third factor that affects the learning environment is the participation in the community through professional discussions and task distribution and the subsequent feeling of being a valued member (Thrysoe et al., 2010). This participation should be planned based on students' capabilities and enthusiasm, and should continue even after their demonstration of competence (White, 2010).

The practice placement site provides learners with opportunities to engage in different and increased stages of participation in the CoP under the sponsorship of the mentors. When they first join the placement site, they are novices and legitimate peripheral participants, with non-existent or low participation, due to their unfamiliarity with the context (Spouse, 1998). When students' familiarity with the context and ability to complete tasks independently increases, their professional competence grows and they become more central to the community (Sayer, 2014; White, 2010).

## TS2. Mentoring strategies

The teaching paradigm and strategies have shifted from a model that is based on the teacher being the main player, to a model that is based on the active engagement of students in their learning, which is a student-centred model (Mayne et al., 2015). The student-centred model is considered a suitable model for teaching and learning in practice placement, where learning from and in practice is the fundamental aspect in professional healthcare education, such as pharmacy. However, it requires special pedagogies, such as PBL, learning clinical skills and attending tutorials, while maintaining communication through appropriate information technology, such as: e-mail discussion lists or online information management systems (Li et al., 2009a).

There are several mentoring strategies for mentors when they are teaching students in these placements (White 2010), as demonstrated in Table 5.7. They provide students with carefully planned support, which is reduced gradually to increase the independence of the students, as soon as their competence develops. Mentoring strategies are demonstration, modelling, coaching, scaffolding, and fading (Cope, Cuthbertson and Stoddart, 2000). As students' confidence and professional competence increases, they undergo more advanced mentoring strategies, such as articulation, reflection and exploration (Cope, Cuthbertson and Stoddart, 2000). Although mentors often implicitly mentor students through these strategies, it is important that they shift to explicit application of mentoring strategies. This can be achieved by orienting mentors to these mentoring strategies, which makes them more structured, and less surprising to students (Cope, Cuthbertson and Stoddart, 2000).

Table 5.7 Mentoring strategies

<b>Mentoring strategy</b>	<b>Explanation</b>
Demonstration	Mentors demonstrate practices for students before letting them undertake real activity.
Modelling	Mentors practise activities in front of students, while drawing their attention to the key professional and behaviour elements of it.
Coaching	Mentors provide students with feedback about their performance, based on the Vygotskian concepts of scaffolding and fading (Vygotsky, 1978).
Scaffolding	Students are allowed to try out techniques suitable for their abilities and skills, while the mentors are ready to be involved, if needed.

Fading	Students are given more responsibility and independence in a controlled manner, so that they gradually develop their competence.
Articulation	Students explicitly communicate and express their understanding of practice.
Reflection	Students compare their competence with that of the mentor or colleagues, which demonstrates knowledge contextualisation.
Exploration	Students apply innovative approaches to their practice, possibly different from their mentors' approaches, to solve professional problems.

### TS3. Shadowing

Through shadowing, practice mentors and university faculty share their professional practice experiences. Mentors shadow faculty while they teach in classrooms, and faculty shadow mentors while they professionally practice in the practice sites. Students shadowing for each other is also an important strategy for students during their practice placement (Mayne et al., 2015).

Shadowing has the benefits of aligning concepts taught in classrooms and practice sites, increasing the understanding of work practices, and easing the student transitions from the classroom to placement. Furthermore, shadowing develops the enthusiasm and commitment of faculty and practitioners, strengthens their professional relationships, and helps them to engage in discussions about curriculum, teaching and assessment methodologies (Mayne et al., 2015).

### TS4. Peer support

Peer support reinforces the social nature of the learning environment through the sharing of knowledge and experiences, providing emotional care, assisting novices in their tasks, enhancing self-confidence, and developing relationships. However, peer support might be disadvantageous and lead to a reduction of learning opportunities. For example, when dealing with peers who are incompetent, or in case there is peer competition in performing the same clinical task (Ranse and Grealish, 2007).

### TS5. Socialisation and acceptance

There are two kinds of acceptance, social acceptance and professional acceptance, which are linked. Social acceptance precedes professional acceptance and should exist for all students even before becoming competent, because students' presence at the practice site facilitates familiarisation with context, which increases their confidence. This ultimately improves the professional trust from experts expected for achieving competence and professional acceptance (Cope, Cuthbertson and Stoddart, 2000). Students may become isolated when they are not socially accepted for some reason, or if a placement period is very short, which makes them observers only, and prevents them from progressing to social and professional acceptance (Cope, Cuthbertson and Stoddart, 2000).

In practical placement, students learning develop from acculturation and socialisation. This makes acculturation into the CoP and becoming socially and professionally accepted the first goal of placement, followed by the application of skills and knowledge (Cope, Cuthbertson and Stoddart, 2000). Hence, it is the responsibility of the academic programme to orient mentors and students to the concepts and the significance of social acceptance and professional acceptance within the CoP.

### TS6. Apprenticeship

White (2010) explained that until 1990, training in the nursing field was based on traditional apprenticeships. The traditional apprenticeship model involves unstructured and task oriented learning by the students. Students used to learn by gaining experience from qualified staff and being included in the daily work tasks of the practice site. Hence, the practice site, which is the employer, was considered responsible for both task oriented education and employment (White, 2010).

More recently the traditional apprenticeship model has been developed into the cognitive apprenticeship model, where professional education has been shifted to the academic sector. Through cognitive apprenticeship, mentors explicitly guide learners towards the cognitive features of professional tasks (Sayer, 2007; Spilg, Siebert, and Martin, 2012). Also, through cognitive apprenticeship, students are additionally situated

members at the practice site until they develop their competence (White, 2010). The concept of cognitive apprenticeship has been further developed into mentoring strategies (Cope, Cuthbertson and Stoddart, 2000), explained in Section TS2.

### ***C. Assessment (A)***

Assessment is a key holistic process in education that has multiple objectives. The Quality Assurance Agency (QAA) for Higher Education (Quality Assurance Agency for Higher Education, 2013) explained that a good assessment is a learning experience that measures learning outcomes in a fair, ongoing and reliable fashion. Assessment also informs the instructor about student performance, offers a basis for decisions about student progression to a higher stage, and gives the opportunity for both the learner and the instructor to get constructive feedback (Garrow and Tawse, 2009).

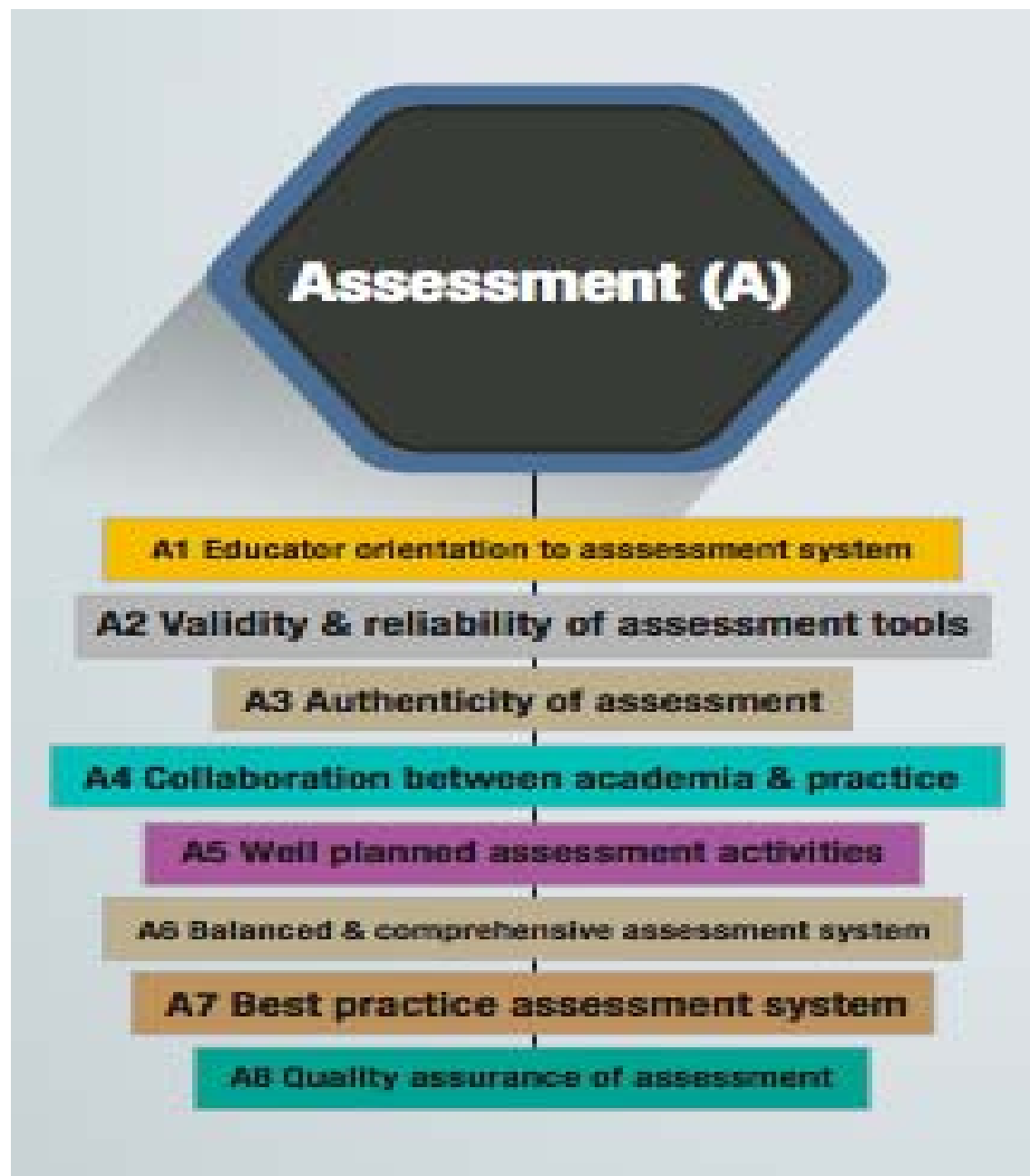
Assessment activities based on constructivist and CoP learning theories should assess students' performance in real practice settings, for the sake of evaluating students ability to structure knowledge, utilise critical thinking, solve real practice problems, and get involved in setting goals. Also, those assessment activities should encourage students towards self-motivated and self-organised learning (Maclellan, 2004). Hence, alternative assessment, described using a range of terms, such as 'performance', 'authentic', 'direct', 'constructive' and 'embedded assessment', is considered a substitute to traditional standardised testing. Elements of assessment are illustrated in Table 5.8 and Figure 5.8.

Table 5.8 Assessment (A)

Assessment element	Code
Develop educator expertise in assessment	A1
Ensuring valid and reliable assessment tools so they are appropriate for use in progress decisions	A2
Authentic assessment activities with progressive increased difficulty level	A3
Collaboration between academia and practice in assessment	A4
Planning the assessment activities	A5
Balanced and comprehensive assessment system	A6
Best practice assessment system	A7
Quality assurance of assessment	A8



Figure 5.8 Assessment (A)



### A1. Develop educator expertise in assessment

It is important to explicitly introduce newly appointed educators to the challenging expectations of the assessment system in a standardised manner and to mentor them practically in the assessment process. This mentorship should be evaluated, especially in areas of decision-making related to students' progression from a level to another. However, a balance should be maintained between this structural orientation of new academics and giving them the opportunity to be creative within the assessment process (Garrow and Tawse, 2009).

### A2. Ensuring valid and reliable assessment tools so that they are appropriate for use in progress decisions

In CoP theory, assessment tools are used for assessing different knowledge, skills and attitudes, with more focus on performance-based assessment because the majority of student learning is achieved through their practice placement. In performance-based assessment, an important factor to be considered is capturing specific skills and competencies, such as professionalism, communication, and engagement. For example, the experiential directors in the Committee on Institutional Cooperation - Pharmacy Assessment Collaborative (CIC-PAC) developed the Professionalism Assessment Tool (PAT) to solve assessment problems such as ceiling effects, where the top score a student can attain on a test is pre-determined, regardless of their ability or knowledge. The CIC-PAC also developed a communication assessment tool in the form of a rubric, and tested it in other colleges (Janke et al., 2012).

Another factor to be considered in performance-based assessment is ensuring the validity and reliability of assessment tools. The reliability and validity assurance has positive outcomes on the educational institute, the professional body, and the community. It implies robust measures of performance, and assures students graduate as knowledgeable and competent practitioners (Garrow and Tawse, 2009). For example, the CIC-PAC professionalism tool was cross-validated after completion (Janke et al., 2012).

### A3. Authentic assessment activities with progressively increased level of difficulty

In a CoP-based programme, the effectiveness of learning is improved by utilising authentic assessment activities. Such authentication can be achieved by allowing students to spend time with patients in real settings and then assessing them with case studies or clinical simulations. Objective Structured Clinical Examinations (OSCE) provides another example of an authentic student assessment (Austin and Duncan-Hewitt, 2005). The complexity of the authentic assessment should be increased gradually, and various authentic and performance-based assessments should be considered in the final decision with respect to a student's academic progression (Austin and Duncan-Hewitt, 2005).

### A4. Collaboration between academia and practice in assessment

Collaboration between professionals from academic and practice institutions is fundamental to successful assessment planning and implementation (Sherbino et al, 2010). The sharing of effort between collaborators is fundamental and could be achieved by dividing them into subgroups, which have scholarly focus. These groups aim to develop new assessment instruments, create a rotating leadership schedule, share potential costs, and network regularly through appropriate channels (Janke et al., 2012).

Peer collaboration with other programmes in professional healthcare education is also beneficial since they are likely to have similar issues regarding assessment. This peer collaboration and sharing of best practices lead to the continuous evolution of assessment efforts and to improved IPE initiatives (Janke et al., 2012).

### A5. Planning the assessment activities

Assessment activities in a CoP based academic programme should be well planned in a proactive, self-directed, and policy-oriented manner, so that they influence the standards of professional bodies, and vice versa. For example, CIC-PAC developed a charter in 2010 that sought to focus the group in its efforts and to define their mission

statement (Janke et al., 2012). Similarly, in the QU CPH and also previously in Canada, the expected skills measured by the OSCE guided entry-to-practice standards set by the professional body.

The assessment plans should also consider accreditation standards, resource constraints, and professional development needs in the area of assessment. Those professional development activities in the area of assessment and assessment tools increase the confidence of new assessors in their ability to assess students. Hence, the professional development in the area of assessment has become more greatly needed by educators than professional development in scholarly writing (Janke et al., 2012). Finally, assessment activity plans should be revisited on a regular basis to ensure that they are accomplished and effective (Janke et al., 2012).

#### A6. Balanced and comprehensive assessment system

In a comprehensive assessment system, both summative and formative assessments complement each other in enhancing learning effectiveness. This comprehensive assessment system provides a true image of the level of student learning in relation to the learning goals and standards. Also, it modifies the traditional power structures of educators over students, which facilitates the transfer of knowledge from school to practice (Austin and Duncan-Hewitt, 2005), as mentioned in Section CH5.

Summative assessments are part of the grading activities administered to students at a particular point in time to capture the alignment between particular content in the curriculum and the students' level of achievement. They also measure the effectiveness of programmes. Formative assessments are considered a teaching strategy and an assessment process, because they allow students to be involved in their own learning through self-assessment. They also inform both the teachers and the students about the student's progress, and hence, timely modifications to teaching strategies can be made to ensure successful learning experiences (Black et al., 2003; Garrison and Ehringhaus, 2007).

#### A7. Best practice assessment system

It is important for an educational institution adopting CoP theory to be constantly exposed to best practices in assessment activities. Having a scholarly focus when planning for assessment activities is, hence, fundamental because it enhances the use of the best evidence-based assessment practices, which contributes to the evolution of research in the area of assessment (Janke et al., 2012). Designers and CoP members should update their knowledge about assessment activities through regularly reviewing journal articles or through attending conferences about assessment. In these events, useful discussions about assessment planning and activities take place between educators who have an interest in this area (Janke et al., 2012).

It is important for an educational programme to seek out best practice in assessment activities that have been applied in peer institutions, and then apply them within its own context. It is also important that an educational programme records its experience with the assessment, so that it is available to other interested institutions. This represents a practical application of the knowledge-sharing concept in CoP (Janke et al., 2012).

#### A8. Quality assurance of assessment

Ensuring the quality of student assessment activities is key for a successful assessment system. In addition to enhancing best practices, discussed in the previous section, the moderation of assessment is an important approach to both quality assurance and faculty development. This moderation confirms the rigorous and consistency of assessment across practice sites (Garrow and Tawse, 2009). Another approach to quality assurance of assessment is external examination, which functions as a key ‘meta level’ assessment process, a peer review, and a tool for sharing assessment practices between institutions (Quality Assurance Agency for Higher Education, 2013). Academics might see some of these approaches as indicating a lack of confidence in their marking and assessment abilities. Therefore these approaches should be introduced to CoP mentors as quality mechanisms, rather than as audits, giving them the opportunity to provide their feedback and make adjustments, as needed (Garrow and Tawse, 2009).

### 5.6.3. Expected outcomes

#### *Outcomes (O)*

Implementing CoP theory has several positive outcomes as illustrated in Table 5.9 and Figure 5.9. The relationship between the outcomes, challenges, enablers and pillars is dynamic and does not reflect a sequential process. This means that some outcomes might start to appear even before having implemented all enablers or all education process pillars, as further discussed in Section 7.2.3. However, the time requirements for transformations are dynamic, and the evidence required to evaluate and identify outcomes is variable and not well established (Fung-Kee-Fung, Boushey and Morash, 2013).

CoP outcomes range from professional outcomes for members to improvements in organisational performance. These improvements occur as a consequence of changes in work practice or through the use of resources offered by the CoP. For example, changes can result in an adoption of a new process or an efficiency tool and an innovation. Changes can also be demonstrated in an increased patient satisfaction and CoP member retention, or positive financial outcomes (Ranmuthugala et al., 2011a).

Table 5.9 Outcomes (O)

Outcomes	Code
Attitudes, interpersonal and professional skills development	O1
Improved personal and organisational performance	O2
Individual knowledge	O3
Integration	O4

Figure 5.9 Outcomes (O)



## O1. Attitudes, interpersonal and professional skills development

The implementation of CoP theory allows students to learn by participating in real practice, and by observing the behaviour of other practitioners. This allows for a more efficient attainment of behaviours (Li et al., 2009a), and the development of habitually skilled practitioners, who use their developed skills in the complex practice context (Ranse and Grealish, 2007).

Self- and shared leadership are examples of linked attitudes that develop within CoP. These attitudes are facilitated by a decreased managerial structure and an organisational investment in the talents of all employees (Ranmuthugala et al., 2011a). Self- and shared leadership within CoPs enables the empowerment of teams of practitioners by mutually influencing processes (Andrew and Ferguson, 2008).

Other developed attitudes and skills within CoP are initiative, interpersonal skills, and the work ethic of the community members (Seibert, 2015), as well as the attitude of a life-long learner who adapts effectively to changes in both theory and practice (White, 2010). Finally, placing students in practical placements improves their professional skills, such as clinical judgement, through the repetition of tasks and the differentiation between usual and unusual tasks (Ranse and Grealish, 2007).

## O2. Improved personal and organisational performance

Personal performance is improved with CoP implementation. This improvement is demonstrated by greater adherence to workplace policies, greater job satisfaction and commitment (Bentley, Browman and Poole, 2010), increased retention of members (Sherbino et al., 2010), rationalised workload (Duncan-Hewitt and Austin, 2005), and stronger identity and belonging. This enhanced personal performance facilitates reflective practice, and encourages innovation (Andrew and Ferguson, 2008).

CoP implementation is also associated with an increased collaboration between academics and practitioners. This results in more efficient practices with respect to



their corresponding organisations, shared resources and more informed problem-solving and decision-making (Seibert, 2015).

### O3. Individual knowledge

Members of CoP progress from a state of accepted knowledge to a state of transformed knowledge by looking differently at the hidden interrelatedness of things and dealing with existing problems in a new way (Andrew and Ferguson, 2008). This results in the learner progressing from being a peripheral member to being a core member, which enhances their identity and status in CoP. This also leads to a deeper understanding of the pedagogic foundation of the practice (Andrew et al., 2009). However, the move from a state of accepted knowledge to a state of transformed knowledge requires abandoning existing assumptions and practices, which is difficult and costly (Andrew and Ferguson, 2008).

### O4. Integration

Collaboration between practitioners and academics has been considered a challenge in the past because academics felt that practitioners lacked rigour, and practitioners felt that academics lacked practical experience, which led to a mutual lack of respect (Andrew, Tolson and Ferguson, 2008). Hence, one of the key outcomes of CoP implementation is the participation of, and collaboration between, academics and practitioners in planning, implementing and achieving the mandates of the education process pillars – curriculum, teaching strategies and assessment –, recognising the importance of the skills and knowledge of both groups (Andrew, Tolson and Ferguson, 2008). This collaboration ultimately leads to a subsequent integration of research and practice and theory and practice.

## **5.7. Application of the CoP framework**

The CoP framework is an evidence-informed model that provides a basic theoretical and conceptual structure. The developed CoP framework is novel in that it provides the basic conceptual structure that aligns CoP learning theory to educational practice, and hence, it can be applied as an instrument, or lens for:

1. An analysis of the design of the existing PharmD programmes or other programmes in professional healthcare education, aiming to create a case study-developed theory about the interaction between learning theories and educational practices, and to reduce the possible disconnect within this interaction,
2. The design and development of new PharmD programmes, or other programmes in professional healthcare education, which align learning theories and educational practices.

The developed CoP framework with its six inter-related sections represents a process that is constantly in flow and evolving over time as specific contexts and circumstances change, rather than a static entity that is accomplished.

## **5.8. Summary of chapter**

This chapter presented the methodology and findings of Stage Three of this research, which aimed to develop a CoP framework based on a rigorous process of extensive literature analysis and peer review. The framework included the following inter-related sections: influencing factors (enablers and challenges), education process pillars (curriculum, teaching strategies, and assessment) and outcomes. Each of these six sections contained several elements that have been listed and described according to their relevance and significance. In the following chapter, the developed CoP framework will be used to closely examine the existing QU PharmD programme, which is Stage Four of this PhD research. This analysis of the QU PharmD programme is essential in developing a case study-developed theory about the

interaction between learning theories and educational practices and for reducing the possible disconnect within this interaction.

## **6. Chapter Six: Findings of Stage Four.**

### **6.1. Introduction**

The previous chapter presented the methodology and findings of Stage Three of this research, which aimed to develop the CoP framework. This framework aims to describe an educational system that aligns CoP theory with educational practices. In this chapter, the CoP framework developed will be used to closely examine the existing QU PharmD programme, which is Stage Four of this research. This analysis of the QU PharmD programme is fundamental in gaining insight into the interaction between learning theories and educational practices and to examine the nature of the disconnect within this interaction.

The chapter starts by explaining approaches to data interpretation to identify implicit and explicit evidence of CoP implementation. This is followed by a presentation of the findings of the deductive data analysis, derived from CoP framework's propositions, highlighting document extracts and respondent perceptions. Next, the findings that centred on themes inductively emerged from the data, which are unrelated directly to CoP framework but relevant to education and pedagogy, are discussed. Finally, a summary and discussion of inductive and deductive findings are presented to bring these elements together and answer the research questions.

### **6.2. Overview of Stage Four and its methodology**

#### **6.2.1. Background**

This stage of research contributes to answering the overarching research question of this study,

How have learning theories influenced the design and implementation of the QU PharmD programme?

by answering the fourth research question:

What elements of the CoP theory are evident in the design and implementation of the QU PharmD programme?

Figures 6.1.a and 6.1.b illustrate the stages of this research, highlighting Stage Four and the PharmD programme's stakeholders. It is worth noting that the findings of the inductive analysis have common elements with those of the deductive analysis, and thus contribute to answering the research questions, as will be discussed in Section 6.5.

Figure 6.1.a Stages of research

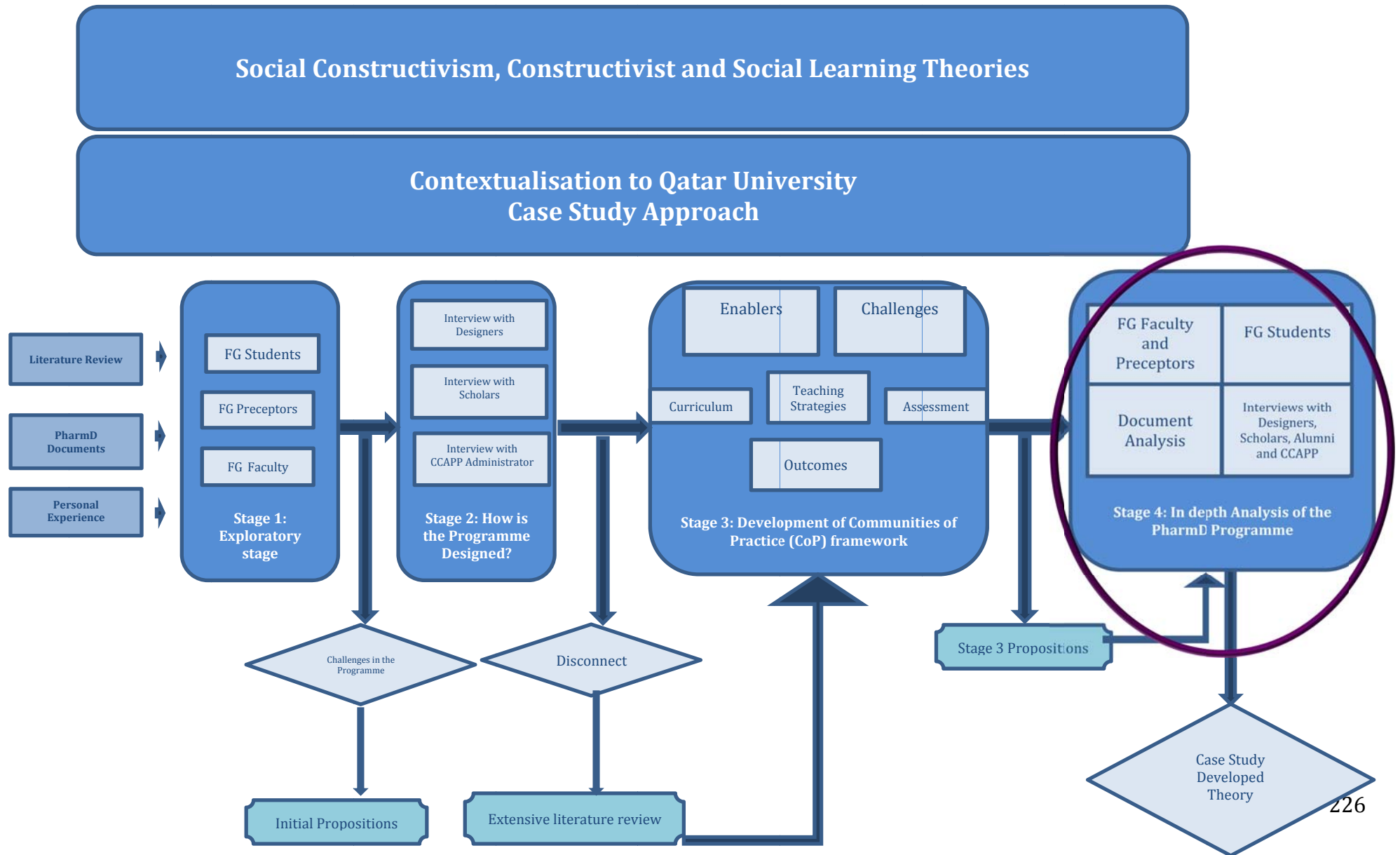
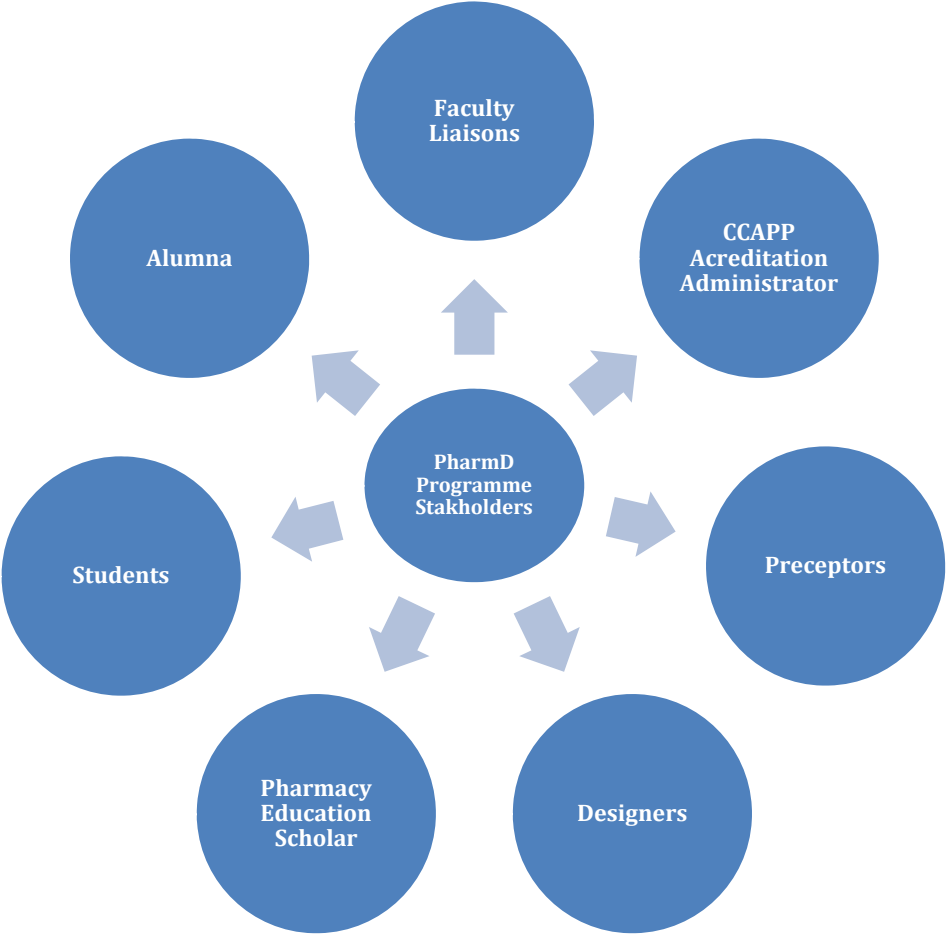


Figure 6.1.b The PharmD programme stakeholders



### 6.2.2. Data collection and sources

In this stage of research, semi-structured interviews and FGs with the PharmD programme stakeholders, and document analysis, were used as data sources.

#### A. Documents

All the key documents that describe the PharmD programme and its development were analysed in Stage Four. Other documents that influenced the design and development from policy, competencies, and learning outcome perspectives were also analysed, as presented in Table 6.1.

Table 6.1 Documents analysed in Stage Four

Name	Date	Source	Function	Code
CCAPP accreditation standards, addendum for the post-BSc PharmD programmes	2006	CCAPP website	Enumerate and explain the old CCAPP standards for the post-BSc PharmD programmes	CCAPP-old-D
College of Pharmacy proposal document	2007	College archive	Request the development of College of Pharmacy at QU to host the BSc and PharmD programmes	Proposal-D
Educational outcomes for first professional degree programmes in pharmacy	2010	Association of Faculties of Pharmacy of Canada (AFPC)	Enumerate and describe entry-to-practice educational outcomes for both BSc and PharmD	Outcomes-D
The design document for the PharmD programme	2010	College archive	Describe the design and study plan for the PharmD programme	Design-D
Entry-to-practice competencies for Qatar	2011	College website	Describe entry-to-practice competencies in Qatar, adopted from Canadian NAPRA competencies	Competencies-D
CCAPP	2012	College	Respond to all old	Preparation-D



accreditation preparation document by the PharmD programme at QU	archive	CCAPP standards in terms of implementation, in preparation for accreditation
CCAPP new 2012 accreditation standards document for entry-to-practice PharmD programmes	CCAPP website	Enumerate and explain the new D CCAPP standards for the entry-to-practice PharmD programmes
Self-assessment of the PharmD programme document by the PharmD programme	2015 College archive	Self-assessment submitted for Academic Programme Review (APR) at QU

### ***B. Interviews***

Semi-structured interviews conducted by the researcher in Stage Four as face-to-face interviews or via Skype are indicated in Table 6.2.

Table 6.2 Semi-structured interviews in Stage Four

<b>Respondent</b>	<b>Type of interview</b>	<b>Code</b>
QU PharmD programme designer 1	Skype interview	S4-Interview- Designer 1
QU PharmD programme designer 2	Skype interview	S4-Interview- Designer 2
QU PharmD programme alumna	Face-to-face interview	S4-Interview-Alumna
Pharmacy education scholar	Skype interview	S4-Interview- Scholar
CCAPP administrator	Skype interview	S4-Interview-CCAPP Administrator

### ***C. Focus groups***

FGs conducted in Stage Four by the researcher or an external researcher are indicated in Table 6.3. Details of the selection of participants, topic guides and the conduct of FGs and interviews were provided in Section 3.13.

Table 6.3 Focus groups in Stage Four

Respondent	Facilitator	Number	Code	Notes
Students	External researcher	1	S4-FG-Students	Cohort of students in the 2014 academic year
Faculty	External researcher	1	S4-FG-Faculty	–
Preceptors	Researcher	1	S4-FG-Preceptors	Conducted at the practice site to increase preceptor attendance

It is important to note that the propositions in Stage Four were developed from elements of the developed CoP framework, discussed in Chapter Five. These propositions were assigned to categories of research participants based on their suitability for consideration in each specific respondent category and the role of that individual or group, as noted in Table 6.4. The choice of specific proposition/s for specific respondent group/s was based on their unique experiences and interaction with the PharmD programme, and the order of the questions varied according to the flow of the discussion. For example, the investigated propositions for students and the questions associated with these propositions were different from those for preceptors or designers. This process was subject to peer review before implementation. These CoP framework propositions also guided the generation of the deductive themes for the thematic data analysis of the respondent FGs and interviews, and for key PharmD programme documents.

Table 6.4 CoP framework propositions and respondent categories

Enablers		
Code	Statement	Respondent category
E1	A co-development team is formed and given clear responsibilities to ensure a thoughtful planning and implementation process. The team requires the participation of all CoP members, including a consultant, a coordinator, a leader, an exemplar, academics, a sponsor and a champion.	Designers, preceptors, scholar, CCAPP.
E2	The co-development approach should involve cycles of reflection, planning, benchmarking, execution, and feedback.	Designers, scholar.
E3	Faculty members are important internal players in CoP planning and implementation, and therefore it is important to address faculty motivation, enthusiasm and satisfaction by rationally modifying the organisational structure, tenure,	Designers, Faculty, preceptors.

	promotion, and merit systems.	
E4	Governmental drivers and accreditation standards should be well understood and integrated with CoP approach.	Designers, scholar, CCAPP.
E5	Mutual trust, respect, and communication using active, passive, and information technology (IT) are essential for exchanging knowledge and creating a CoP as a driver for the reciprocal learning and professional development of all members.	All.
E6	The CoP structure developed is guided by strategic objectives that are quantitative, qualitative, operational, aligned with the organisation's mission and suitable for the needs of the COP members.	Designers, scholar, CCAPP, students, alumna.
E7	Since the concept of practical placement is key to the development of CoP members, the time requirement for teaching strategies during practical placement and the regulatory policies to support student responsibility should be reconsidered to ensure that they are appropriate for achieving CoP operational objectives.	Designers, scholar, students, alumna, CCAPP.

### Challenges

Code	Statement	Respondent category
CH1	There are specific measures and clear outcomes of CoP prior to its implementation that are effectively communicated to all members at the start and reinforced to new members as they join.	Faculty, scholar, designers, preceptors, faculty, alumna, students.
CH2	The additional time commitment required for effective CoP implementation might be too much for members.	Faculty, scholar, designers, preceptors.
CH3	CoP implementation is more successful in societies with stronger social structures that grow in a sociocultural environment that signify groups, community, harmony, and collectivism.	Scholar, faculty, preceptors, designers, CCAPP.
CH4	The concept of CoP is usually effective in organisations that have less organisational hierarchy, so that individuals with similar professions and communication patterns solve problems, exchange ideas, and share knowledge.	Scholar, CCAPP.
CH5	To increase confidence in students, it is important to introduce them to the CoP concept early in their studies and to expose them to practical placements at different stages of their degree in an integrated, synthesised and planned fashion.	Students, designers, scholar, alumna.
CH6	It is important to retain a balance between the number of employees in an institution and the typical number of members in CoP to ensure the expected proximity between members.	Scholar, CCAPP.
CH7	The competitive environment in some organisations might lead to rigidity of competence, because individuals trust their own competence, which makes them reluctant to integrate practices	Scholar, faculty, preceptors,

and competence from other CoP members into their practice.	CCAPP
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### Curriculum

Code	Statement	Respondent category
C1	In CoP, both formal and informal learning are important, and therefore academic and practice mentors should understand their implications, and ensure that both types are measured in terms of affecting student competence.	Faculty, preceptors, students, alumna, CCAPP, designers.
C2	Knowledge should be 'recontextualised' as students move between the university classroom and workplaces, through student use of the workplace and the mentor to socially construct, reflect and reshape knowledge, so that they link theory and practice.	Students, alumna, faculty, preceptors, designers.
C3	In curriculum development, the practice placement timing, nature and duration should be properly planned, taking into consideration student goals and needs.	Students, preceptors, designers, alumna.
C4	Compatibility between professional licensing, accrediting body requirements and course requirements for dual accreditation serves the learners' best interests.	Designers, scholar, CCAPP.
C5	CoP theory encourages the integration of academics and practitioners, recognising the importance of their skills and knowledge in developing a shared repertoire of resources, a range of theoretical frameworks, tools and a practice-based learning through a planned experiential work placement.	Preceptors, faculty, CCAPP.
C6	Practical placements in pharmacy provide an example of an integrated curriculum where fundamental science courses are merged within the context of pharmacy practice through the application of authentic practice-related matters, and hence provide opportunities for students to apply all parts of the curriculum in professional practice.	Students, designers, faculty, scholar, alumna, CCAPP.

### Teaching strategies

Code	Statement	Respondent category
TS1	Ensuring an appropriate learning environment is fundamental in CoP, such as healthy relationship between students, mentors and health professionals, the feeling of belonging, the gradual shift of participation from peripheral to central and professional identity.	Students, preceptors, scholar, CCAPP, designers, alumna.
TS2	The students undergo different mentoring strategies that progress over time, as their competence develops, such as demonstration, modelling, coaching, scaffolding, fading, articulation, reflection and exploration. The aim of these strategies is to provide the students with planned support that is based on a student's active engagement in their learning.	Students, preceptors, designers, faculty, CCAPP, alumna.
TS3	To ensure that concepts taught in the classroom and the practice	Faculty,

	sites are aligned and integrated, student mentors from the practice sites shadow the academic faculty while they teach in the classroom and academic faculty shadow practitioners in the practice site.	preceptors, students, alumna.
TS4	Peer support reinforces the social nature of learning through sharing knowledge and experience, learning from peers, providing emotional support, assisting novices in task completion, enhancing self-confidence, and developing relationships.	Students, preceptors, scholar, designers.
TS5	Both social acceptance and professional acceptance are important for entering the CoP and are linked because student presence at the practice site facilitates familiarisation, which gradually increases student confidence, which in turn increases the competence expected for professional acceptance.	Preceptors, students, alumna.
TS6	Mentors should understand the concept of cognitive apprenticeship where students are considered additional members at the practice site during their practical placement period until they gain competence, and that cognitive apprenticeship is the foundation of the other teaching strategies.	Preceptors, scholar, designers, CCAPP.

### Assessment

Code	Statement	Respondent category
A1	Educator expertise and experience in assessment should be developed by formally orienting newly appointed educators to the expectations of the assessment system and practically mentoring them in the assessment process.	Preceptors, designers, faculty, scholar.
A2	Assessment tools are valid and reliable, so they are appropriate for use in progress decisions.	Preceptors, faculty, designers, scholar, CCAPP.
A3	Assessment tools are authentic and their level of difficulty progressively and gradually increases.	Students, alumna, faculty, preceptors, designers.
A4	Collaboration between academics and practitioners in assessment leads to sharing experiences, trusting relationships, open discussions, and future initiatives, as well as problem-solving, without barriers.	Faculty, preceptors, designers.
A5	Assessment activities are well-planned activities, proactive, measured on a regular basis to ensure that they are accomplished, and policy oriented, so that they align with the requirements of professional bodies.	Designers, scholar, CCAPP.
A6	The assessment system is balanced and comprehensive, containing both summative and formative systems that reduces the power structure of professors over students and allows them to set their own goals.	Students, alumna, preceptors, faculty, designers.
A7	The assessment system is frequently compared to best practice and new approaches in assessment that have been tested and applied.	Designers, scholar, CCAPP.

A8	There is a quality mechanism to moderate the assessment of student assignments to ensure rigorous assessment and consistency across practice bases.	All.
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### Outcomes

Code	Statement	Respondent category
O1	Students gain important skills and attitudes with CoP implementation, such as self-leadership, professional skills, clinical judgement skills, initiative, interpersonal skills, and the work ethic of the community members, as well as developing the attitudes of a life-long learner.	Students, alumna, faculty, preceptors, designers.
O2	CoP implementation leads to the increased efficiency of members, commitment, motivation, job satisfaction, and retention, which is good for the organisation's performance.	Preceptors, faculty, scholar.
O3	Members of the CoP progress from a state of accepted knowledge to a state of transformed knowledge, which progress their identity and move them from being peripheral members to core members.	Students, alumna, preceptors, faculty, designer.
O4	Collaboration between practitioners and academics leads to integration between research and practice and between theory and practice.	Faculty, students, alumna, preceptors, scholar.

### 6.2.3. Data analysis

In this stage, a deductive thematic analysis of documents, FG data, and interviews was conducted, based on Stage Four propositions. Also, an inductive thematic analysis of FGs data, and interviews suggested useful concepts and themes that were not related to CoP framework or propositions, but they are potentially of interest, because they contribute to answering the research questions. After following these two strategies in the data analysis (deductive based on propositions and inductive), the two distinct parts of the analysis were brought together using the explanation-building analytical technique, as explained in Section 3.14. The data analysis was done using NVIVO Mac software, as described in Section 3.14.1.

It is important to note that few of the CoP propositions have more than one aspect in one proposition, and hence, while conducting the deductive analysis, the implementation of those few propositions, in the QU PharmD programme, was evident in some aspects of the proposition, and not in others. This made it difficult to judge the extent to which the proposition was evident. This judgement represented a

grey area, on a continuum between implemented and not implemented. In these situations different perspectives and evidence on the implementation of these elements were presented, to allow the readers to understand the researcher's interpretation. Following the member checking quality measure, described in Section 3.11.1, one respondent suggested adding an analysis category that identifies CoP framework elements that were partially evident in their implementation, instead of having categories of only either fully implemented or not fully implemented elements, as will be illustrated in Sections 6.5 and 7.2.3. The researcher applied this suggestion to identify propositions that were difficult to categorise, or in grey areas.

### **6.3. Implicit versus explicit application of CoP framework**

For the purpose of this study, the term *explicit application* means that the CoP element is clearly evident and demonstrated in the programme, and evidence is provided to support it. *Implicit application* means that the presence of the CoP element is considered unexpressed and unintentional, or possibly implied and lacking evidence for support. At the beginning of the data analysis, quotes and document extracts were categorised as explicit or implicit, based on whether the degree of support for the implementation of the CoP was evident and intentional.

During the early stages of the data analysis, however, it became clear that the majority of respondent quotes and document extracts suggested the implicit application of CoP theory, such as the alignment of the programme requirements with CCAPP accreditation standards. All respondents lacked a fundamental understanding of CoP theory, except the pharmacy education scholar. This prevented them from explicitly addressing CoP framework use. In cases where the designed and implemented activities of the PharmD programme clearly demonstrated elements of the CoP, this was by default rather than due to explicit knowledge of CoP theory. It was therefore decided that categorising quotes and extracts as explicit or implicit was not fruitful. This is an important observation and finding in itself, and suggests that the implementation of most CoP-derived practices was implicit, and thus not coordinated with other pedagogical practices, because the understanding and comprehensive

implementation of CoP was not intended in the design and implementation stages. This has resulted in an educational programme that lacks consistent, coordinated and well-defined pedagogical elements, as will be discussed in Sections 7.2.1 and 7.2.3.

## **6.4. Stage Four findings**

### **6.4.1. Findings of the deductive data analysis, based on the CoP framework propositions**

The findings are categorised based on the six CoP framework sections, represented by propositions, and therefore do not reflect the prevalence of perspectives. They are simply an overview of perspectives and counter-perspectives.

#### ***6.4.1.1. Influencing factors***

##### **a. Enablers (E)**

In this section, the PharmD programme is analysed in relation to what were considered the ideal conditions for CoP implementation.

##### ***1. Propositions of Enablers section***

##### **E1: Co-development team**

The first proposition in the enablers section is about creating a team for co-development of the programme, with clear responsibilities for each member, to ensure a thoughtful planning and implementation process. This team requires the participation of a CoP consultant, a community coordinator, a leader, an exemplar, academics, a sponsor, and a champion, as explained in Section 5.7.1, A. The significance of broad involvement was stressed in the CCAPP standard:

*‘Plans and the planning process should benefit from the support and cooperation of the Faculty administration, and should involve administrators, faculty, students, graduates, and others as appropriate.’*



CCAPP-old-DSeveral important elements emerged from an interview with the pharmacy education scholar, regarding planning of a PharmD programme. First, it is vitally important to involve educational experts, practitioners, and even students in the planning team for a PharmD programme:

*‘So in my ideal world, we would have a team composed of students, educationalist, and of course we need a content expert. We need people who are teaching experts, so they can inform the actual design of the curriculum, the assessment, and teaching methods. We need to have students because they are the actual clients of our curriculum.’*

S4-Interview-Scholar

The scholar pointed out, however, that these stakeholders are not involved in real-world practice. Secondly, any planning for a programme should consider the importance of involving a consultant in the co-development team, primarily because of their experience in curriculum and teaching strategies.

The steering committee for designing the QU PharmD programme did not include a consultant or preceptors, and the preceptors were only involved in student teaching, not in the planning or designing processes, because of their lack of experience with PharmD programmes as perceived by the PharmD designers. This lack of preceptor involvement at the design stage negatively impacted their core membership and their perception of being valued members of the team, as some preceptors indicated in their FG. This lack of involvement at the design stage also resulted in their lack of involvement in subsequent stages of the education process.

According to interviews with the designers, and a review of the documents there was an evident lack of stakeholder involvement in planning the QU PharmD programme. When asked about this concern, one of the PharmD designers stated:

*‘If you would like to ask if there was formal involvement or a committee of many pharmacy practitioners in the process, then the answer is no. The reason for that is not an attempt to be non-inclusive, but because the vast majority of individuals in the hospital practice environment had not had any exposure to a PharmD programme. So their understanding of the programme was limited.’*

S4-Interview-Designer 1

**It seems that some key members were involved in the QU planning process, but not others, which is not ideal in the design of a programme adopting a CoP approach. For example, the involvement of consultants and practitioners did not take place in the planning of the PharmD programme, despite the significance of this enabler being emphasised by key respondents and documents. This lack of involvement negatively affected the feeling of being valued members of the team. The involvement of preceptors in the design stage is fundamental in providing real-world perspectives, aligning educational process with workplace expectations, bridging theory and practice and in facilitating future involvement in the implementation stage. Justifying the non-participation of preceptors by their lack of experience with a PharmD programme is unhelpful, because CoP literature does not consider previous involvement with a new programme to be a condition for practitioner involvement. Consultants were also not involved in the design of the programme, which is problematic, because their role is significant in guiding and assisting the development of the CoP and answering unique queries about the particular context.**

#### E2: Development approach

The second proposition (E2) centres on developing a design approach that is comprised of reflection, planning, benchmarking, execution, and feedback cycles that should ideally take place after assembling the CoP implementation team, as discussed in Section 5.7.1, A.

It is important for educational programmes to establish systematic programme development and review processes to align plans with goals and objectives, as articulated by the pharmacy education scholar in his interview. He commented that, unfortunately, the development approach to PharmD programmes is not moving in the right direction, because programmes act reactively to solve and deal with any current problems and issues, rather than having sustainable approaches. He suggested that programmes should undergo continuous revision cycles:

*‘It needs to be something that evolves over time. You should not develop a curriculum and then think that you are done. You need to develop it,*

*implement it, and then review it after the first year, and then review everything again after the first batch of students have gone through for the entire four years of the curriculum. You need to have a process of constantly reviewing, refreshing, and renewing the curriculum.'*

S4-Interview-Scholar

This process was also stressed in the CCAPP-new-D, which indicated that the programme should develop an evaluation system that measures the achievement of goals and objectives and that provides information to support future planning and decision-making.

The QU PharmD programme developed a systematic evaluation process that regularly evaluates its goals and objectives to see if they have been achieved, as explained in the Preparation-D document. This process involves a variety of programme stakeholders, such as the Programme Director, in collaboration with the Dean, Associate and Assistant Deans, the Section Head of Clinical Pharmacy and Practice, course coordinators, full-time and adjunct faculty members, clinical partners, alumni and students, when appropriate.

QU policy mandates that all academic programmes review and evaluate their performance by submitting a regular self-study report to the APR department at QU. This mandate and the PharmD programme's response of submitting the Self-study-D in 2015 are evidences of an awareness of the need for continuous cycles of reflection, evaluation, and quality improvement, as explained in Section 1.4.3.

Also, all QU academic programmes, including the PharmD programme, have to work with the PLOAC and submit regular reports to improve the achievement of learning outcomes:

*'The PLOAC (in collaboration with the programme director and staff) adopted improvement actions to further promote achievement of programme learning outcomes at higher levels than measured.'*

Self-study-D

CCAPP accreditation is important for programme development, and its standards act as guiding principles, as noted by the CCAPP administrator in his interview. In the QU PharmD, part of the development approach was the preparation for CCAPP accreditation. All stakeholders were involved in this important step, because part of the accreditation standards and evaluation included visiting the practice sites and meeting with the preceptors. The involvement of all stakeholders, including preceptors, positively influenced both the accreditation process and the preceptors' commitment, because it enhanced their understanding of the accreditation requirements and expectations. This finding suggests the power of the accreditation process to affect the programme by requiring preceptor involvement in the CCAPP accreditation activity but not in the development team, as discussed in the previous section.

Benchmarking is another important part of the development process in an educational programme. Benchmarking was implemented in the QU PharmD programme in the design and development approach:

*'We had a curriculum based on our experience in North America and on the desire to emulate the medical model, which is successful in medical education and practice. So we have no reason to believe that it would be unsuccessful in pharmacy education and practice.'*

S4-Interview-Designer 1

This benchmarking to a successful medical model reinforces the significance of following best practices from pharmacy or other healthcare professions after confirming contextual suitability, which will be discussed in Section 6.4.1.2. Another example of benchmarking in the QU PharmD programme is the adoption and adaption of the NAPRA competencies. The PharmD programme slightly modified these competencies, with permission, so that they matched Qatar's needs, as described in the following extract:

*'With the NAPRA organisation's permission and with acknowledgement of the source, minor modifications to the professional competencies document have been made to reflect practice in Qatar.'*

Competencies-D

This adoption and adaption suggests that the reflection element of the development approach was performed in the QU PharmD programme. Its use also demonstrated the importance of the design pull of the CCAPP and international professional regulators.

**The above data suggests that the QU PharmD programme implicitly implemented important elements of CoP development approach, such as benchmarking, evaluation, and reflection, which were evident in the programme. Planning, execution, and feedback were not consistently evident. However, feedback about the programme's assessment and evaluation should be considered structurally in the programme, to indicate whether there is a need to further modify actions and processes in subsequent review stages. The programme should ensure that the reflection and evaluation approaches are ongoing approaches and cycles that constantly evolve as contexts change, rather than as accomplished approaches, as will be discussed in Section II.**

### E3: Internal drivers including faculty member satisfaction and involvement

Faculty members are internal drivers of educational programmes, and thus their satisfaction is important because it enhances their involvement and ownership of a CoP, which increases student achievement, as explained in Section 5.7.1, A.

The significance of faculty involvement and satisfaction through an appropriate academic appointment and promotion system was stressed in the CCAPP-old-D and CCAPP-new-D. However, respondents did not address the academic appointment and promotion system explicitly in their data, because this topic was not central in the FG.

In terms of involvement, some faculty liaisons felt that participating in professional practice through the liaison role in the PharmD programme met their needs and enhanced their job satisfaction:

*'The cross-appointment arrangement with practice sites gives us the opportunity to practice. I think that this is a very important part of having a relationship with the preceptors. Right? Because it keeps us knowledgeable about practical issues and about what is happening in the practice and the*

*applicability of guidelines, especially since the practice is changing. Sometimes being only in academia does not give this opportunity.'*

S4-FG-Faculty

Other faculty liaisons noted a dissatisfaction with their level of involvement in the programme, however, particularly in decision-making and communication. They also claimed that they were only involved in student- related decisions when they acted as student preceptors:

*'When we are precepting students, we have a lot more involvement than those of us who are not precepting students and only conduct visits once or twice during the rotation. When we are not precepting, we cannot make many decisions, we can only suggest things.'*

S4-FG-Faculty

This lack of involvement in decision-making and communication is unfavourable for the educational programme because of the liaisons' direct relationship with, and effect on, the university and students. This dissatisfaction, as suggested in CoP framework, negatively affects their motivation and enthusiasm. Maintaining a qualified pool of faculty liaisons was thus a challenge, as suggested by the following extract:

*'Inabilities to generate, recruit, and retain qualified clinical faculty members in these cross-appointed positions are among the largest threats to the programme's sustainability.'*

Self-study-D

**It appears from the above data that some faculty liaisons were satisfied with the opportunity to participate in practice through the PharmD programme, however, other faculty liaisons were not satisfied with their involvement, especially in terms of the level of communication or decision-making. Recruiting and retaining qualified and satisfied faculty liaisons could be challenging for the programme. Appropriate academic appointment and promotion systems were suggested in the documents but not mentioned by respondents, as they were not asked about them directly and specifically, which resulted in a lack of confirmation and practical evidence. This lack of faculty involvement and**

**satisfaction could also negatively affect student achievement and learning, as will be further discussed in Section II.**

E4: External drivers including integration with governmental drivers and accreditation standards

The fourth enabler proposition is about the integration of governmental drivers and accreditation standards during the development of the programme, as the key external drivers of educational programmes, as explained in Section 5.7.1, A.

The programme's goals, whether to obtain GCC accreditation status or international accreditation status, should affect the programme's planning for its curriculum, assessment, research, and student expectations, as suggested by the CCAPP administrator in his interview. The QU PharmD programme was aligned with the requirements of the university, and with the CCAPP accreditation standards, aiming to achieve the goal of international recognition at the level of accreditation by the CCAPP agency, as suggested in the Design-D, Preparation-D, and Self- study-D, and by both programme designers in their interviews. However, the local and regional educational outcomes and governmental drivers did not affect the design of the PharmD programme, as suggested in the Self-study-D and by both PharmD programme designers. This is because there were no local educational outcomes and competency expectations, and because the development of the programme preceded the national strategic healthcare development initiatives:

*'Well, SCH was not intimately involved in the pharmacy profession. I would say that people in SCH had some involvement or some interest, but we have led the profession through our academic programmes and had the drive to advance the profession rather than being mandated by the SCH.'*

S4-Interview-Designer 1

Recently, the integration with governmental drivers started to be more evident in the consideration of the Prometric licensing exam (Prometric is a U.S. company that develops and delivers tests in more than 350 organisations worldwide (Prometric, n.d.). The Prometric licensing exam is required and conducted by MOPH, formerly

SCH, for student admission to the PharmD programme. The integration with governmental drivers also became evident in the shaping of scholarly activities so that they align with governmental priorities, as suggested in the 2011–2016 Qatar National Health Strategy (NHS):

*‘The 2011–2016 National Health Strategy was launched at the start of student enrolment, but after the study plan had been developed. Part of the strategy emphasises local demand by employers for qualified graduates and researchers, which confirms the need to train pharmacists to an advanced level.’*

S4-Interview-Designer 2

**The above data suggests that the PharmD programme design was integrated with the CCAPP accreditation standards at its inception, which demonstrates the power of these standards in shaping the programme and the profession. The PharmD programme designers and administrators considered recognition by the international professional body as an important success factor, because it positively affected pharmacy education and the profession by directing student instruction, and the scope and level of practice. The PharmD programme design was not clearly integrated with governmental drivers, however, due to the lack of structured licensing arrangements and the scope of practice for pharmacists at programme inception. The integration with governmental drivers started to be more evident in subsequent stages, in the use of the Prometric licensing exam in student admission. Governmental drivers were also evident in shaping scholarly activities and stressing the need for graduate programmes and, subsequently, the PharmD programme, as noted by the 2011–2016 NHS. Future efforts to enhance the design of the programme should ensure sustainable integration with the governmental drivers, local and regional educational outcomes, and competency expectations, as well as with international accreditation drivers, as will be discussed in Section II.**



#### E5: Mutual trust, respect, and communication using active, passive, and information technology (IT) to facilitate reciprocal knowledge exchange

The significance of mutual trust, respect, and open dialogue between participants in CoP, and each person's contribution to decision-making and an open communication environment through different channels was discussed in Section 5.7.1, A.

An open communication environment is fundamental in facilitating knowledge exchange and coaching among academics, students, and practitioners. In the QU PharmD programme, open communication was demonstrated in all programme documents. For example, the Self-study-D explained that revisions and updates in strategic and operational objectives were regularly communicated to faculty members. All PharmD students and some preceptors supported the presence of respectful and open communication, which are important elements of a healthy environment:

*'If we have any problem, faculty liaisons always follow it with us. If we have any questions, even in the practice, they are close. They listen to our comments and concerns.'*

S4-FG-Preceptors

The respect that some preceptors and faculty had for students was perceived as below expectations by the PharmD alumna. These contradictory views between students and the alumna could be explained by the changes that took place over time in the educational environment, since the alumna was from the second cohort of students in the PharmD programme, whereas the students in the FG were from the fourth. These positive changes in the environment could have resulted from the feedback cycles of previous students or faculty, or from the recruitment of new preceptors who are more respectful.

Integrating both active and passive communication in an educational programme is important to exchange information and knowledge. In the QU PharmD programme, the concepts of active, passive, and IT-based communication were applied through therapeutic discussions, mentoring, and quality control that aimed to measure what went right and what went wrong in the programme, as explained in the Preparation-D document. In this regard, one of the PharmD programme designers noted that active

communication with students at the end of each semester used to take place, to learn about their experience, learnt skills, and future plans. The designer considered this communication with students to be a learning and professional development opportunity. Similarly, the employment of IT communication is significant in facilitating learning. This was also demonstrated in the QU PharmD programme through the use of heterogeneous delivery methods:

*‘Graduate level courses will also be delivered using in a hybrid programme using a combination of synchronous and asynchronous curricular delivery methods.’*

Design-D

When various channels of communication were discussed with research participants, all faculty liaisons suggested that the communication between faculty liaisons or preceptors and students was open:

*‘I feel communication is very open. The students feel that they can approach the preceptors and myself. The preceptors can email me anytime and feel comfortable that I am going to respond in a timely fashion.’*

S4-FG-Faculty

It was not clear whether this communication between preceptors and liaisons served the purpose of exchanging knowledge, reciprocal learning, and professional development. Similarly, the active communication between the PharmD designers and different stakeholders was for the purpose of sharing PharmD programme updates rather than for reciprocal learning and professional development, as noted by one of the PharmD designers.

Interestingly, different preceptors perceived active and passive communications differently. Some preceptors in the FG expressed their satisfaction with communication channels for different purposes and at different levels. However, other preceptors suggested that feedback and communication from the college did not contribute to their future performance and professional development, which revealed dissatisfaction. The PharmD alumna, who was a preceptor trainee at the time of the interview, noted that communication between faculty liaisons and preceptors was not at an appropriate level because of the lack of consistent feedback from the programme

to the preceptors. She also said that some preceptors avoided direct communication with faculty liaisons during their visits:

*‘Most of the preceptors who used to hide from faculty liaisons, did not have enough qualifications to be PharmD preceptors. Maybe this explains why they used to have this behaviour.’*

S4-Interview-Alumna

Preceptors and faculty liaisons had different perspectives on the level of communication between them. In their FG, almost all preceptors described their communication with liaisons as inadequate, which could have resulted from a lack of collaboration between them in curriculum, teaching, and assessment or other aspects of the programme. One example given by some preceptors was that they did not know what students did at the university every other week:

*‘No idea at all about what is given to students when they go to the university. We only know that students have some sort of activity in the university.’*

S4-FG-Preceptors

However, all faculty liaisons perceived their communication with preceptors as adequate, facilitated by liaison visits to practice sites, to discuss issues about students or about precepting.

**This data suggests that the environment and communication in the PharmD programme was generally healthy between students and faculty liaisons and between students and preceptors. However, the different perspectives on the level of communication between faculty liaisons and preceptors suggest that the openness and clarity of communication could be improved. There should be an improvement in communication between all stakeholders, to ensure that documentary descriptions of the healthy environment and proper communication are practically fulfilled and implemented. These findings reinforce the significance of open communication for successful CoP implementation, which could be achieved through stronger collaboration and relationships. According to the data, communication through different channels was not necessarily shaped by knowledge exchange, which is the ultimate goals in CoP. Hence, active, passive, and IT communication need to be structured and**

**shaped by knowledge exchange, reciprocal learning, and professional development, so that it is productive.**

E6: Aligning the PharmD design with the strategic objectives of the college and university

None of the respondents commented on alignment with strategic objectives, because the researcher felt that it was more important that other enablers were thoroughly discussed, and thus this proposition was not directly examined in the FGs or interviews. However, document analysis indicated that the programme design was aligned with the strategic plans and objectives of the CPH and QU, as illustrated in the following example:

*‘The implementation of a PharmD programme is included in the overall goals for the college and is one of the strategic objectives that was approved by the College of Pharmacy Accreditation and Strategic Planning Committee (CCAPP) on June 29, 2008. This objective was also included in the College of Pharmacy 2008 - 2012 Strategic Plan Report.’*

Design-D

E7: Time requirement and regulatory policies for practical placement

Other critical enabler propositions (E7) are the time requirements and the regulatory policies of the practical placement. These policies are important to clarify and support student responsibility and authority, and subsequently govern their involvement in CoP, as discussed in Section 5.7.1, A.

The number of practical placements required is an essential decision when developing a PharmD programme. In the QU PharmD programme, it was decided to have eight practical placements, each with a four-week duration. When students were asked about the number of placements in the FG, the majority suggested that eight rotations were suitable for the Qatar setting, mainly because clinical pharmacy practice was nearly the same at different practice sites. Some students suggested including international clinical rotations to expose them to international practice standards. In

that regard, the Preparation-D document demonstrated that the administrators in the PharmD programme worked hard to complement local practical placements with international practical placements through affiliations with international universities. The duration of placement was another key factor investigated through interviews and FGs. One of the PharmD designers indicated that preceptors generally perceived the duration of placements as inadequate:

*‘There are times when preceptors would say that they wished that they had the students longer, because they were really becoming professional and independent, but this was in their last week of their rotation. So they wondered what rotations would have been like if they were one or two weeks longer.’*

S4-Interview-Designer 2

Another essential factor is a clear policy about practical placement that explains the details pertaining to these placements, as required by the old CCAPP accreditation standards:

*‘To meet the educational outcomes for patient care, rotations in acute and ambulatory care should be available, and three-quarters of the rotations should be with core and/or adjunct faculty. The number of PharmD students per preceptor should be limited to a maximum of two students.’*

CCAPP-old-D

The significance of policies that govern a student’s scope of responsibilities was reinforced by the new CCAPP accreditation standards in CCAPP-new-D. These policies should clarify the authority and responsibility of the programme and the practice site. Policies should address issues related to students, such as liability and professional conduct. In the QU PharmD programme, there was no formal governmental or institutional policy to elaborate on this important element in the QU PharmD programme. All students noted that their scope of responsibility was variable from one placement to another, based on the preceptors, as illustrated in the example:

*‘Some preceptors are fully aware that we are licenced pharmacists, and not students anymore, so they trust and respect us. Other preceptors are the opposite. They know that we are licenced pharmacists, they respect us, but they are less trusting. They do not let us perform freely.’*

S4-FG-Students

This lack of clear and detailed policies about the responsibilities of students and preceptors was a challenge for some preceptors:

*‘Sometimes, students need more orientation. They should understand more about their responsibility and the responsibility of the preceptors. I had difficulty with students in the beginning because of that.’*

S4-FG-Preceptors

**In summary, the data suggests that the duration and number of placements were fairly appropriate from the student point of view. The duration was perceived as inappropriate by preceptors, because they felt that some rotations ended at the point when students became well-developed professionals. More evidence is needed to suggest the best placement duration for successful CoP implementation. A separate formal policy that clearly governs the student scope of responsibility during practical placements should be created and applied in the QU PharmD programme, in compliance with new CCAPP accreditation standards. This developed policy would facilitate student contributions to the profession and CoP. The increase in placement duration associated with a more independent role of PharmD students could increase student accountability, as will be discussed in Section II, which is good for practice sites and for CoP establishment.**

## *II. Discussion of enablers findings*

In the following section, the findings about enablers are summarised and discussed to determine whether various enablers were implemented in the QU PharmD programme or were overlooked. The judgement about whether some propositions were more significantly implemented or, more importantly, not implemented (in this section and in Sections IV, VI, VIII, X and XII) was based on the researcher’s interpretation, as noted in Section 6.2.3.

The data suggests that some CoP enablers were implicitly implemented, since the programme did not intentionally aim to follow a specific pedagogical theory or paradigm, as explained in Section 6.3. The development approach included

benchmarking, evaluation, and reflection, which are important elements of the design cycle. Wilbur, Paiva and Black (2015) noted that feedback received from students and preceptors after the first year of QU PharmD programme delivery affected decisions taken in the following years, such as orienting students to the role of faculty liaison, and introducing a faculty advisor for each student. However, data collected in this research suggests a perceived ambiguity in the liaisons roles by the students (fourth cohort). This data conflicts with the conclusions of Wilbur, Paiva and Black's (2015), and suggests that feedback significance should be reinforced. This reinforcement was stressed by Barnett et al. (2014) to adjust actions in subsequent stages, if needed, based on evaluative information. Janke et al. (2013) suggested that programme assessment should involve both formative assessment of the educational programme for improvement of student learning and educational outcomes, which is the core principle of feedback, and summative assessment by an accreditation agency.

The findings with respect to the accreditation agency's role indicate that the design of the QU PharmD programme was integrated with the CCAPP accreditation standards, which acted as guiding principles for the programme. Integration with governmental drivers became evident only recently, and this needs to be reassessed for sustainability and coverage. Also, the findings of this PhD research suggest that assessment practices shaped by accreditation standards should not be the sole external drivers. This finding is supported by Janke et al.'s (2013) findings, which explained that assessment practices for educational programmes should not be influenced by the accreditation standards alone. They require accountability and efforts from the organisations that support the universities and their education programmes.

The environment, and communication between students and faculty, and between students and preceptors were mostly healthy, with relatively variable perceptions of the level of respect as perceived by students. Respect is an important component for enhancing student learning in the workplace because it illustrates the significance of student roles. Portoghese et al. (2014) suggested, based on their study of nursing students, that respect is improved with improved role clarity. Well-defined and fair roles enhance student engagement and communication with other members, and healthcare professionals. However, effective active and passive communication should be directed towards reciprocal knowledge exchange. McAllister, Oprescu and

Jones (2014) supported the value of communication and dialogue among nurse educators in the process of learning, sharing expertise, professional development, and, consequently, the process of transition from nurse to educator within a CoP. They argued that effective and structured communication via various channels for the purpose of knowledge exchange solves the problem of professional isolation and helps nurse educators meet education challenges. Nemec and LaMaster (2014) suggested exchanging ideas, information, resources, and knowledge within CoP via variable channels, such as gatherings, websites, and social media, which enhances member abilities to balance knowledge exchange and their existing responsibilities.

Enhancing communication between different stakeholders, especially between academics and practitioners, and shaping it with reciprocal knowledge exchange, to build trust in the expertise of the other, is fundamental to collaboration between CoP members. These findings are supported by Burton, Boschmans and Hoelson (2013), who argued that giving preceptors the opportunity to participate in various aspects of education programmes develops their professional identities through membership in multiple CoPs, the nexus of multi-membership, which encourages them to utilise their practice experience in improving their teaching, which increases their job satisfaction. Wilding, Curtin and Whiteford (2012) explained that within a CoP, the established dialogue between academia and practice encourages practitioners to reflect on their practice, enhance their skills, develop professionally, and improve their practice.

The duration and number of rotations were appropriate from the student point of view. However, findings suggest that a prolonged duration of specific placements is important, because the longer the students spend in placement, the more professional and independent they become. This finding is supported by Hudson, Westib and Farmer (2012), who, in line with previous studies, suggested that students become an 'extra pair of hands' with longer rotations, and contributors to the practice. They further suggested that the duration of one or two months is the 'turning point' for students to become independent and cost-effective in their education. The findings of this research suggest the need to investigate the optimum practical placement duration in a CoP-designed educational programme, to design effective and efficient learning in practice sites, which is consistent with Hudson, Westib and Farmer's (2012) conclusion. Frankel, Louizos and Austin (2014) argue that rotations of 2-4 weeks



duration are short and inadequate for student identification of their roles and responsibilities or their active engagement. Again, the authors did not suggest an optimal duration.

The findings of this stage clarify the need for detailed policies that govern the student scope of responsibility to facilitate their accountability and their progression from being peripheral members to being central members in that particular community, which is one of the key features of CoP. This finding is in line with Hägg-Martinell et al. (2014), who suggested that universities and healthcare organisations usually have different missions, goals, laws, and regulations, which could create an inappropriate environment for student learning and supervision. Hägg-Martinell et al.'s (2014) study emphasised that students should be given clear responsibilities, while clarifying the scope of supervision and reliance on their supervisors. Students can then progress from being peripheral practitioners to being more central ones, which reduces their burden on preceptors and healthcare organisations (Hall, 2006).

The co-development team did not include some key members, such as preceptors, who bring practice experience to the design, and did not include externality and advice from experienced educators or consultants who might have helped the designers of the programme to be better connected with learning theories. This lack of preceptor and consultant involvement is problematic. This finding is consistent with previous research, which explained that if the purpose of a CoP is to exchange knowledge, then fresh input is necessary from external experts and different stakeholders, who have different roles (Nemec and LaMaster, 2014). They stressed that stakeholder involvement is important but requires planning, because it consumes time, effort, and financial resources. They highlighted the significance role of community leaders in motivating members to participate in CoP and encouraging them to build personal relationships, which enhances their communication and ideas exchange.

Faculty member involvement in communication and decision-making was not adequate, which made recruitment and retention challenging, due to the lack of attraction to employment and satisfaction with their roles. Without the clear involvement of practitioners as part of a balanced design team, and without ensuring

faculty satisfaction and involvement, a true CoP could not be formed and progressed. This is because the lack of participation, involvement, and satisfaction of faculty or preceptors affects other elements of the CoP framework, such as collaboration between academia and practice sites, as will be discussed in Sections CH2, C5 and A4 of this chapter.

#### b. Challenges (CH)

Identifying CoP implementation challenges is important to gradually minimise and eliminate them. In this section, the PharmD programme is analysed in relation to elements that were considered challenges to CoP implementation. Although respondents were not directly asked about these challenges, their responses to questions and document extracts were interpreted in the light of, and aligned with, CoP challenges.

### *III. Propositions of challenges section*

#### CH1: Different interpretations of CoP and lack of communication about measures and outcomes of theory

The first challenge centres on the lack of effective communication between CoP members regarding specific measures and outcomes of theory at the start of the programme and as new members join. This challenge is particularly important because there are different interpretations of CoP theory, as explained in section 5.7.1, B.

It is important that all CoP members understand the significance and objectives of the learning theory and how to measure its success after implementation, as suggested by the pharmacy education scholar. This shared understanding might ultimately encourage members to work together towards CoP implementation, and so communicating measures, outcomes, and expectations to preceptors is fundamental, as suggested by the CCAPP administrator. He justified his claim by indicating that preceptors are central, as they spend the majority of time with students and evaluate their competencies.

Theories underpinning the practical placement concept and the learning in and from practice models of learning were not communicated to preceptors or faculty liaisons in the QU PharmD programme:

*‘We are familiar with the practice of pharmacy and with teaching and serving as a role model to our students, but we don’t know if this is related to a theory. I mean, we kind of guess and understand what that might mean, but we are not trained as educators, so we do not know if we are using that particular theory.’*

S4-FG-Faculty

Both PharmD programme designers commented that they neither had enough knowledge, nor provided other stakeholders with information about a guiding theory of the programme. This lack of understanding and communication of the theory affected the preceptors’ understanding of their roles and responsibilities as well as that of the students at the beginning of the programme, as most preceptors noted in their FG.

As this research progressed, the PharmD programme team started to understand the role of learning theories in PharmD programmes through the discussions that took place in interviews and FGs. In 2015 the most recent programme document used some pedagogical terminology, identified in the following example in bold text:

*‘Through a complementary interactive campus-based and **situated learning instructional study plan design**, the PharmD programme strives to deliver an outcome-based curriculum.’*

Self-study-D

However, there was no evidence from participants that they understood this pedagogical terminology “situated learning”, or that they could communicate or implement this in their educational practices.

**From the above data, it appears that understanding and communicating CoP theory was a challenge and did not take place at the level of designers or at the level of preceptors or faculty liaisons. Preceptors and faculty liaisons justified this lack of understanding as the result of not being prepared as educators,**

which is a problem in itself. This lack of knowledge explains why the implementation of some CoP framework elements was implicit rather than explicit and partial rather than comprehensive, as will be discussed in Section 7.2.3. However, it appears that awareness of the learning theory significance was enhanced by this research project, which was communicated to faculty and designers. As a result, some pedagogical terms appeared in the most recent programme document. Therefore, it is important to ensure there is a common unified understanding and communication of theory in all members of the team to avoid superficial pedagogical descriptions or application, as will be discussed in Section IV.

#### CH2: Time commitment

The second challenge involves the additional time commitment required for effective CoP implementation to distribute and apply the tasks and responsibilities of CoP among its members, which can be perceived as a work overload, as explained in Section 5.7.1, B.

Since QU PharmD programme designers, faculty liaisons, and preceptors lacked knowledge of CoP theory, they were not asked in the FGs or interviews about the associated time commitment with CoP implementation and task distribution. Document analysis demonstrated that both non cross-appointed faculty and faculty liaisons were dissatisfied with their teaching workload. The dissatisfaction of faculty liaisons with their workload was because it did not fully account for their visits to the practice sites and for precepting international students, as suggested in the bold text below:

*‘Despite approved reductions in on-campus teaching workload, **members still annually record hours disproportionately to non-cross-appointed faculty, given their off-campus assignments.** This is also in the face of **actual teaching time that is not fully accounted for (faculty liaison visits, graduate student advising).** These faculty members also bear the responsibility of hosting international students.’*

Self-study-D

Visits conducted by faculty liaisons to practice sites are fundamental success factors in the PharmD programme, according to the CoP framework, because they facilitate the implementation of other key elements, such as shadowing, collaboration, and preceptor mentoring and monitoring. These visits also facilitate healthy communication for the purpose of reciprocal knowledge exchange. Failure to account for these visits in the faculty workload is a challenge for CoP implementation.

**The limited data available suggests that the additional time commitment required for facilitating learning in and from practice, through faculty liaison visits to practice sites, was not considered in their workload. This affected the involvement of faculty liaisons in some other curriculum, teaching, and assessment activities, as will be illustrated in various sections in this chapter.**

### CH3. Sociocultural environment and CH4. Organisational hierarchies

In spite of the significance of these two challenges in the CoP framework, as explained in Section 5.7.1, B, they were not investigated in FGs and interviews. Investigating the organisational hierarchies and systems in this research was complex, because students were taught in several hospitals and clinics, which had different organisational systems and environments. The diversity in practice sites, environment and systems reduced the practicality of measuring the impact of these key challenges in this research. The exploration of these two challenges requires a broader research focus, and better-allocated resources than available in this study.

### CH5: Students' lack of confidence

The fifth challenge is about the lack of confidence students have in their own abilities, which results from a failure to introduce early and integrated practical placements. This lack of confidence impacts on the feasibility of implementing the CoP approach, and, hence, it is essential to introduce students to practical placements early and at different stages throughout the degree in an integrated, synthesised, and planned fashion, as explained in Section 5.7.1, B.

An important element of placement integration is introducing students to basic placements before specialised and advanced ones. Also, it is essential to balance student experience in acute and ambulatory care placements to meet the educational outcomes for patient care, as explained in the CCAPP-old-D. In line with this, full-time students in the QU PharmD programme were exposed to practical placement early and at appropriate intervals during their BSc, as noted by one of the PharmD designers in the interview, which prepared them for advanced placements in the PharmD programme.

During the PharmD year, practical placements were not well integrated or balanced in terms of their sequence, as argued by the majority of PharmD preceptors, and illustrated in the following example:

*‘If the first rotation for a student is critical care cardiology, then how will this student learn about basic concepts? When she jumps to critical care heart failure, and critical cardiac infraction, how will she know about fundamentals? This problem is common, important and it gives us a hard time.’*

S4-FG-Preceptors

Preceptors appreciated that this problem was associated with the small number of qualified preceptors in practice sites, yet ended up introducing students to basic concepts during specialised rotations, which wasted the time allocated for more advanced and specialised concepts. This reinforces the idea that advanced rotations should be introduced later in the PharmD year:

*‘Regarding the sequence of my rotations, the second rotation was critical care, so it was very difficult. The sequence of the rotations should change by having the more complicated rotations in the second part of the year.’*

S4-Interview-Alumna

Most PharmD students suggested in their FG that there was no balance between the ratios of general rotations to specialised rotations. For example, some students had one intensive care unit placement, while others had three or four. The PharmD programme designer explained this imbalance is due to the restricted capacity of the programme in terms of the number of qualified preceptors:

*‘I think ideally students should start with more general rotations, like general internal medicine, and then progress to more specialised care, such as neonatal ICU rotation. In the outset, we had ten students, so we had eighty rotations. So, depending on the availability of the preceptor, we operationally could not start with ten less-specialised rotations.’*

S4-Interview-Designer 2

**In light of the above data, it seems that integrating practical placements in a sequenced and balanced fashion was a challenge in the QU PharmD programme, in spite of the CCAPP accreditation standard emphasis on proper balance. This challenge was associated with a lack of preceptors in particular placements, which further indicates a lack of optimisation of resources; preceptor numbers and time compared to student needs. It is worth noting that this challenge negatively affected student experiences, effective learning, confidence in their abilities, and preceptors’ time. Careful planning of the details of the practical placement is required in terms of sequence, balance, and duration, as suggested above in Section E7, and needs special attention and efficient alignment with available resources. This challenge will be discussed in Section IV.**

#### CH6: Balance in the number of members in CoP

Balance between the number of employees in an institution and the average number of members in CoP is the sixth challenge for CoP implementation. This balance is key because successful CoP implementation happens ideally within small groups, to ensure the expected proximity between members, as discussed in Section 5.7.1. This challenge was not explicitly articulated in the FGs and interviews in terms of the number of pharmacists in practice sites and how this affects membership in a CoP, because the preceptors represented different institutions with different organisational systems, however, some extracts gave insight into this element. For example, the number of preceptors, and the number of faculty liaisons determined the class size of students:

*‘Class size is determined principally by the capacity of adjunct clinical faculty members to offer quality experiential learning experiences (advanced clinical*

*internships or “rotations”) and the resources of campus-based cross-appointed clinical faculty members available to offer their own advanced clinical internships and support adjunct clinical faculty and graduate students on rotation.’*

Self-study-D

**The available data indicates that the number of preceptors who mentor students in practical placements was a challenge for the PharmD programme. Preceptor capacity affected the implementation of other important aspects of CoP, such as practical placement integration and sequence (CH5), which makes these two challenges interrelated, as will be discussed in Section IV. The data does not describe a balance between the number of employees in an institution and the typical number of members in CoP, which is an area to be investigated further.**

#### CH7: Rigidity of competences and competitive environment

It was not possible to discuss this challenge in depth with respondents, because they needed to have some knowledge about CoP theory. Other challenges were more evident in the programme and emerged more pressingly in the discussion, but the pharmacy education scholar explained that the presence of a competitive environment is a barrier to successful CoP implementation:

*‘I think that this can be a barrier to successful collaboration. At the heart of CoP is the notion of collaboration, and if the culture of the environment is very competitive, that might be a problem.’*

S4-Interview-Scholar

#### *IV. Discussion of challenge findings*

It was not possible to discuss some challenges with respondents during data collection, because they needed in-depth knowledge of CoP theory. Data collection focused on challenges that are more important in learning experiences and education processes than in the organisational system, and therefore there is not enough data



about the sociocultural environment, the organisational hierarchy, or the competitive environment from this review of the PharmD programme at QU.

Some CoP challenges were evident in the PharmD programme, such as the understanding and communication of CoP theory as a learning theory. The presence of this challenge affected the investigation of other challenges and the implementation of other elements of the CoP framework. This challenge is fundamental, and its elimination is a prerequisite to the successful implementation of a comprehensive CoP-based educational system. A lack of knowledge about CoP theory particularly, and learning theories generally, affected the implementation of other elements of the CoP framework by key stakeholders such as designers, preceptors and faculty, who were not introduced to learning theories. This finding is supported by Hult et al. (2009), who explained that patient care processes are underpinned by pedagogical processes, and it is therefore important to introduce students in healthcare professions to pedagogical concepts and pedagogical knowledge and encourage them to learn about them. It is also important to teach students how to teach healthcare professional students, because this will be an important part of their future profession.

The limited number of preceptors affected the implementation of other aspects of CoP, such as practical placement integration and sequence, which affect student learning and confidence. Other countries in the region, such as Saudi Arabia, are facing the same challenge in the availability of a number of qualified preceptors as noted by Aljadhey (2013). He added that the increased number of students accepted on PharmD programmes and the increased number of pharmacy schools are associated with a difficulty in finding adequate preceptors, who match the expected quality criteria. He suggested several solutions to rationalise available resources, aligning them with needs, while taking into consideration all placement details.

Lack of confidence in students is a key finding in the data, which needs attention, because confidence is a key component of clinical decision-making and practice. This finding is consistent with the study by Frankel and Austin (2013). They argued that there are clear links between the quality of mentorship in practical placements, professional confidence and professional identity. Well-designed practical placements associated with good mentorship enhance student professional identity, which affects

their identification of responsibilities and improves their clinical decision-making and practice. These well-designed placements are characterised by a planned progression of student responsibility through increased exposure to practical experiences and real clinical practice. Other factors affect student confidence, such as the hierarchy of the medical system, personality traits upon admission to the academic programme and ownership (Frankel and Austin, 2013).

The additional time commitment required for visiting practical placement sites was not considered in faculty liaison workloads, which is connected to the time commitment required for CoP implementation. Faculty liaisons were not fairly recognised for the time they spent in faculty liaison visits in their teaching workloads, which they conduct to complement the learning process in the PharmD programme. This further affected the implementation of other CoP elements in the curriculum, teaching, and assessment activities and thus needs special attention. Nemec and LaMaster (2014) noted that the assignment of CoP core members should be voluntary rather than a forced assignment, which is not easy in a learning environment. Core members should have the intrinsic motivation and commitment to participate, and to encourage the participation of other peripheral members. Creating, managing, and maintaining motivation and commitment is key to CoP success, but challenging. The time commitment expected from core members is more than that expected from peripheral members. However, to maintain interest, the participation of all members should be within regular work hours. In the QU PharmD programme, Wilbur, Paiva and Black (2015) explained that in the pharmacy profession in Qatar preceptors need to cope with: their increased responsibilities as practitioners, the enhanced scope of practice, and with their new responsibility in precepting students. Maintaining a balance between these complementary responsibilities is challenging and requires support from the academic programme.

#### ***6.4.1.2. Education process pillars***

The following section discusses the implementation of the education process pillars of the CoP framework in the QU PharmD programme.

## a. Curriculum (C)

### *V. Propositions of curriculum section*

#### C1: Formal and informal learning

The first proposition in the curriculum is about integrating formal and informal learning. Workplace learning occurs formally and informally, and both types are essential for effective practice. However, informal learning is implicit and unstructured, and occurs when students learn from socialisation in an authentic work situation, as explained in Section 5.7.2, A.

The CCAPP administrator explained that students learn when they are in practice by communicating with healthcare professionals and patients. In the practice environment students learn certain concepts that cannot be taught in classrooms, such as their responsibilities toward patients, as suggested by one of the PharmD designers. In their FG, the majority of preceptors noted that students informally learned several key skills in practical placements. For example, one of the preceptors said:

*‘They learn a lot. They get the experience and skills in how to approach the physician, how to communicate, how to discuss with confidence, and how to prove themselves as clinical pharmacists, making decisions and defending their points.’*

S4-FG-Preceptors

Also, students noted in their FG that they learned the appropriate time and topics for intervention with the healthcare team through practical placements, which made their intervention valuable to the team’s needs. In fact, informal learning was not only by students. Faculty liaisons explained that preceptors learned informally through the preceptorship component of the PharmD programme. Some students referred to this learning as a ‘win-win’ relationship with preceptors:

*‘We have therapeutic discussions frequently. We go and look for the most up-to-date information on the management of specific diseases. Then, we discuss it with preceptors. It is a win-win relationship with preceptors; we learn something new, and they revise what they already know.’*

S4-FG-Students

When the PharmD alumna shared her past experience in the PharmD programme, she explained that some preceptors engaged in unpleasant, overprotective behaviour, demonstrated by supervising student interactions and performance until the last day of the placement. This extensive supervision is potentially damaging to student opportunities for informal learning, and therefore the alumna suggested keeping a balance between supervising student activities and giving them the opportunity to learn independently from the work environment.

It is worth noting that the concept of informal learning was not discussed explicitly in the PharmD documents, only formal learning was discussed. For example, the Self-study-D document explained that students gain knowledge and skills through the formal, planned learning in classrooms and internships. The CCAPP-new-D document noted that quality pharmacy education is a matter of basic and professional knowledge, as well as practical experiences.

**Comments from respondents about formal and informal learning implicitly demonstrate the importance of both types of learning, explaining that informal learning took place through interaction with more experienced healthcare providers in the practical placement, and that informal learning was extended to preceptors. However, some preceptors struggled to keep a balance between closely monitoring students and giving them the opportunity to informally and independently learn through interactions, as will be discussed in VI. The lack of explicit reference to informal learning in key programme documents could suggest that it was not considered when designing the PharmD curriculum, which reveals a need for reinforcement.**

#### C2: Transfer of tacit knowledge to explicit knowledge and knowledge recontextualisation

Knowledge recontextualisation can be defined as the transfer of theories taught in the classroom to work-based contexts, and the application of what is learned in practice in enhancing theories taught in the classroom. Recontextualisation requires students to

use the workplace and mentors in socially constructing knowledge, as discussed in Section 5.7.2, A.

Knowledge gained in the BSc programme was applied in the QU PharmD programme's practical rotation and was planned by the PharmD designers, as they explained in their interviews. For example, taught pharmacokinetic concepts were applied in real patient care, and reinforced by most preceptors. This recontextualisation of skills in real patient cases was applied to student research skills, as agreed by faculty liaisons in their FG. Almost all students argued that they gained more knowledge during the PharmD year than they had gained in the four years of the BSc programme, however, this successful application would not have been achieved without a strong theoretical foundation:

*'These concepts were very well built into the undergraduate programme. Now we just apply them in the rotations of the PharmD programme. This is one thing that we need to credit the undergraduate programme for.'*

S4-FG-Students

Several extracts in PharmD documents confirmed that student recontextualisation of knowledge is one of the key learning outcomes:

*'Scholar: Pharmacy graduates have and can apply the core knowledge and skills required to be a medication therapy expert, and they are able to master, generate, interpret, and disseminate pharmaceutical and pharmacy practice knowledge.'*

Outcomes-D

This learning outcome has been accomplished, as suggested by the Self-study-D. For example, students in outreach activities used their knowledge, skills, and professional judgement to provide appropriate patient care and counselling. Because of the significance of recontextualisation, its corresponding learning outcome should be measured through appropriate assessment methods and tools.

**The above data suggests that knowledge recontextualisation and student construction of acquired knowledge and skills have been implemented in the PharmD programme. This recontextualisation component was designed in the**

**programme because it is a learning outcome, as indicated in the Outcomes-D under the learning outcome “Scholar”. However, implementing appropriate measures for assessing this knowledge recontextualisation is fundamental to ensure that explicit connections are made between the knowledge and the practice components of the PharmD programme, as will be discussed in Section VI.**

### C3: Practice placement details

Special attention should be paid to practice placement details, such as location, duration, and alignment with student goals and needs. This proposition is comprised of two elements: the practical placement details and the alignment with student goals and needs, as explained in Section 5.7.2, A.

The location of the practical placement is an important detail to consider in designing the curriculum, because it reflects various authentic practice settings and patient cases. In the QU PharmD programme, the majority of practical placements were in local hospitals, and the ambulatory care internships were undertaken in a private clinic. There are plans to expand practice sites to include primary healthcare units, as suggested in the Preparation-D. The significance of the appropriate distribution of practical placement locations and exposing students to various patient settings was reinforced in CCAPP-new-D. One of the important practice settings is the drug information placement, as noted by almost all preceptors, because it orients students to fundamental concepts of practice, which makes the preceptor’s job easier in subsequent placements.

The gradual increase in the sophistication of the tasks in placement, which is based on learners’ skills, is an important factor to consider, because students become more central to the practice and CoP when they are exposed to increasingly complex tasks and roles. However, the sophistication of tasks and roles is directly related to the placement’s duration and sequence, as discussed in Sections E7 and CH5. This was reflected in comments from most students suggesting an increased duration of specialised placements, and the delivery of basic rotations before specialised ones.

Other important details about practical placement were planned in collaboration with preceptors, as suggested by the designer:

*‘We talked with preceptors about common issues such as learning objectives, evaluation tools, and the simple logistics of the rotation, including the time of student arrival, opening messages, midpoint evaluations, and the purpose of rotations.’*

S4-Interview-Designer 1

The second vital element in this proposition is considering student goals and needs when planning for practical placements, which allows them to take ownership of their learning and prepare them to become life-long learners. The Preparation-D suggested that students have to submit written reflections about three personal objectives and needs before each practical placement, which were part of their assessment tools. In an interview with the PharmD alumna, she explained that her needs during the PharmD programme were generally met:

*‘I remember that I wanted more focus on monitoring parameters or discussing patient cases. So the programme identified specific objectives for me, and a faculty liaison conducted more visits in order to follow up with me and meet my requested focus.’*

S4-Interview-Alumna

Some FG students argued that these written reflections were not always given adequate attention by the PharmD programme in terms of refocusing the placement plans. This lack of attention caused some students to write their reflections without detailed thought, as if they were just doing their homework. Almost all students commented that they were not given the opportunity to choose their preferred specialty for practical placements, as illustrated in the following example:

*‘We have just come from an international rotation. Students overseas get the opportunity to choose and prioritise rotations, and then they are placed according to their priorities. So I think it would be very helpful if we get the chance to choose our preferred specialty.’*

S4-FG-Students

**It is possible to infer from the presented data that the planning of practical placements was done in coordination with practice sites and preceptors, aiming to expose students to a variety of practice settings. Students were given the opportunity to reflect on their needs and goals, however, there were differences between what was planned (written by students in documents about their reflections) and what happened in the real practice. Consideration of student needs and goals in curriculum planning should be reinforced, as will be further discussed in Section VI.**

C4: Dual Accreditation: Compatibility between professional licensing, accrediting body requirements, and course requirements

The fourth proposition centres on the alignment of professional licensing, the accrediting body, and course requirements to achieve dual accreditation, as discussed in Section 5.7.2, A.

The midpoint evaluations that take place in the middle of the practical placement are one of several proofs of alignment with CCAPP accreditation standards, as explained by one of the PharmD programme designers. These evaluations affect the curriculum because their results help in planning for the remaining placement period. CCAPP accreditation standards not only affect course requirements, as noted by the CCAPP administrator, but also staff planning.

There was no effort to align the course requirements with the professional licensing requirements, because MOPH did not have professional licensing requirements at the time of the PharmD programme's inception, as explained in Section E4. After the PharmD programme establishment, however, the MOPH adopted the NAPRA competencies with minor modifications, which led to alignment between the PharmD programme and national and international accreditation standards:

*'The primary objective of the PharmD programme is to provide a local opportunity for advanced training in the clinical pharmacy sciences to meet the healthcare and related research needs of Qatar and the region. This is in*



*direct alignment with national, university, college, and accreditation agency priorities.'*

Self-study-D

**The PharmD programme curriculum was compatible with the CCAPP accreditation standards but not with professional licensing body, MOPH, requirements in the early stages of programme development. However, this alignment improved after the MOPH adaptation of NAPRA competencies for pharmacists. This alignment facilitates the graduation of pharmacists who possess the competencies required by local and international standards, as will be discussed in Section VI.**

#### C5: Integration of academics and practitioners

A key part of the curriculum is the effective integration of academics and practitioners in developing practice-based learning, which utilises the various skills and knowledge of both groups, as discussed in Section 5.7.2, A.

Several documents in the PharmD programme emphasised shared responsibility between faculty liaisons and preceptors in curriculum coordination at each stage of practical placement, including the CCAPP-new-D. This was reinforced in the interview with the CCAPP administrator, who explained that preceptors are valuable in drawing the practice context directly into the education process, which facilitates the development of a curriculum that is based on practice expectations.

The PharmD programme originally aimed for an integrated delivery between university clinical faculty and preceptors, as suggested by the Preparation-D, because this intended collaboration creates strength, as reinforced in the following quote:

*'The roles of practitioners and academics would be running parallel and would never overlap. We have the structure in place that allows communication and the opportunity for synergy 1+1 =3.'*

S4-Interview-Designer 1

Unfortunately, this collaboration was not always evident from the perspectives of most preceptors. They often felt their relationships and connections were only with students, rather than with the college or faculty, and therefore many preceptors suggested a stronger collaboration between themselves and faculty liaisons in syllabus planning and in teaching, as illustrated below, and indicated in Section 6.4.2:

*‘Being involved in teaching some practice-related issues is very helpful for students.’*

S4-FG-Preceptors

The lack of collaboration is observed in different sections of this chapter, indicates a lack of recognition of the key role of preceptors in the PharmD programme, and suggests this is a significant issue to be addressed in this thesis.

**The data clarifies that the significance of collaboration between faculty and practitioners was emphasised in several PharmD programme documents. This significance is associated with utilising the practitioner skill set in designing a curriculum that meets practice needs and expectations. However, preceptors suggested that this collaboration was not adequately implemented. This could have potentially resulted from the lack of preceptors involvement in the original programme design and have subsequently affected their collaboration with faculty in teaching and assessment, as will be discussed in Section A4.**

#### C6: Integrated curriculum

An integrated curriculum is a fundamental factor in producing graduates who can apply their knowledge in solving complicated practice problems when evidence is insufficient. Different kinds of integration were discussed in Section 5.7.2, A.

The BSc and PharmD programmes involve vertical integration, because graduate-level courses in the PharmD programme are explicitly designed as extensions of the BSc courses, with the expectation of achieving advanced outcomes, as suggested in the Preparation-D. One of the PharmD designers described this vertical integration as

‘lovely and natural’, whereas in the faculty liaison FG, most faculty liaisons emphasised the existence of integration between placements in BSc and PharmD:

*‘I would definitely say they are linked. The students in the undergraduate programme join actual placements in rotation sites and learn from them. So once they get into the advanced level of rotations in the PharmD programme, they already have the foundational skills and take these skills to the next level.’*

S4-FG-Faculty

Horizontal integration is about integrating practical placement with the fundamental science and clinical courses from a variety of disciplines in the BSc and PharmD programmes, and could be achieved through the application of the curriculum in authentic professional practice. The pharmacy education scholar argued that horizontal integration provides students with the opportunity to apply all parts of the curriculum in their professional practice:

*‘The idea of learning the “in and from practice” model really speaks of the notion of experiential education and using the practice site as the way of driving learning within a clinical degree like PharmD or MD or DDS or any of the clinical degrees.’*

S4-Interview-Scholar

This kind of integration ensures that students apply what they learned in the classroom into practice, while handling the full responsibility of solving real practice problems, as explained by one of the PharmD programme designers. He added that students were not expected to learn about first-order kinetics in practical placements but rather to apply them in an acute care hospital. Most students confirmed that what they practiced in the PharmD placement year was an application of what they had learned in the classroom, which is the direct achievement of the following learning outcome:

*‘Care Provider: Pharmacy graduates use their knowledge, skills, and professional judgement to provide pharmaceutical care and to facilitate the management of patient medication and overall health needs.’*

Outcomes-D

Almost all preceptors claimed that horizontal integration was not strong between what students learned in the classroom, which is based on textbooks, and the real practices in placements, which are based on up-to-date clinical practice guidelines, and therefore the CCAPP administrator suggested that fundamental science faculty members should work together with clinical faculty members so that students are presented with an integrated syllabus that can solve pharmaco-therapeutic problems. This opinion was also supported by the Outcomes-D, which encouraged educators to consider integrating teaching about dispensing with teaching about providing pharmaceutical care.

It is worth noting that curriculum integration should not be the only focus when designing a curriculum or solving curriculum problems, as suggested by the pharmacy education scholar, because delivering an integrated curriculum is dependent on effective teachers, which reinforces the significance of all education process pillars.

**The findings suggest that there was a clearly designed vertical integration between BSc courses and PharmD courses, which aimed to prepare the students for advanced practical placements in the PharmD programme. This vertical integration was achieved by designing the graduate-level courses in the PharmD programme as extensions of the BSc courses, with the expectation of achieving advanced outcomes. The practical placements in the PharmD programme provided an example of an integrated curriculum, in which the fundamental science and clinical courses were merged with activities in practice settings. However, some data suggests that horizontal integration between the classroom and the real practice in placements was not adequate and requires enhancement through collaboration between fundamental sciences and clinical faculty members during the design stage, which could ultimately improve a student's practical competencies, as will be discussed further in Section VI.**

#### *VI. Discussion of curriculum findings*

Data suggests that some important curriculum elements were implemented in the PharmD programme. For example, the curriculum prepared students to

recontextualise acquired knowledge and skills and to connect theory with practice. Gonczi (2013) confirmed that thinking and doing, or mind and body, could not be separated. Gonczi (2013) suggested making close ties between codified knowledge and the knowledge developed through acting in the real practice, which is more difficult to codify, however he did not suggest or discuss the best tool for assessing knowledge recontextualisation. This suggests a need to reconsider and rethink authentic and comprehensive assessment methods for assessing the performance of students in real patient care in the QU PharmD programme, as explained by Wilbur (2015).

As indicated in Section E4, PharmD curriculum requirements were aligned with CCAPP accreditation standards. Compatibility with the professional licensing body became more evident at a later stage in the evolution of the programme, after the MOPH adaptation of the NAPRA competencies for pharmacists. The significance of the governmental role and support for CoP initiatives was emphasised by Spilg, Siebert and Martin (2012), who argue that CoP theory application should be extended beyond the level of healthcare organisation. CoP theory application should take into consideration the broader influence of economic and political factors, to have an effect on the external environment forces, clinical governance and the governmental healthcare system.

The application of informal learning in the PharmD programme through communication and socialisation with more knowledgeable peers was implicitly described in the data, however, the significance and contribution of this form of learning to the curriculum was not explicitly described in the documents or communicated to educators. This lack of explicit understanding and inclusion in curriculum planning affects the true application of CoP in the programme. The significance of informal learning was stressed by Thrysoe et al. (2010), who advised educational programmes against relying on formalised learning and ignoring informal learning when students are in practical placements. They argued that the formalisation of learning reduces the active participation of students in CoP. Spilg, Siebert and Martin (2012) confirmed conclusions from the literature about the effectiveness of informal learning, which is identified in some literature as unplanned teaching (Hult et al., 2009). Spilg, Siebert and Martin (2012) noted that academic institutions

demonstrated their shift from a formal means of learning to informal experiential learning by encouraging students to learn through legitimate peripheral participation in practice. They concluded that medical education policy support for informal learning is fundamental, but disappointingly did not take place in their setting.

The planning of practical placement details, such as planned variation in duration, to acknowledge complexity or nature of learning task, did not seem to be fully implemented in the PharmD programme. This is important because the duration of the practical placement and, consequently, its sophistication, can change student participation in the CoP from being peripheral to more central. This finding is supported by Frankel, Louizos and Austin's (2014) findings, which demonstrated that exposing students to practical placements for short periods does not give them the opportunity to transfer the theoretical knowledge gained into advanced practice skills, to actively engage in their own learning, and to participate in real practice.

In spite of asking students to reflect on their needs and goals, there did not seem to be a consistent and adequate consideration of student needs and goals in the PharmD programme. Student ownership of goals and needs is an important component of CoP because it affects their feeling of responsibility about their own learning, whether they are students or professionals. Nilsson et al. (2010) noted in their observational study of clinical medical education that medical teachers did not generally conduct effective teaching. They explained that teachers rarely discussed learning objectives with students and did not adjust the content based on student understanding or needs. This lack of discussion and adjustment forced students to find their own methods of knowledge transmission and demonstration, so that they benefit from their clinical placement. The significance of considering student needs was also reinforced by Goldie et al. (2015), who argued that ineffective teachers are not considerate of student learning needs and distinctive characteristics, and thus push them beyond their individualised ZPDs, which demotivates them.

Collaboration between faculty liaisons and practitioners appeared to be inadequate. This important element was also discussed in Sections E4 and CH2. Wilding, Curtin and Whiteford's (2012) conclusion supported the significance of collaboration. They explained that in a well-designed CoP, collaboration between both faculty and

practitioners and among faculty starts in the early stages of a programme's design and develops naturally during the education process.

Notably, there was evidence of the vertical integration of BSc courses and PharmD courses, which was important to prepare students for advanced courses and practical placements in the PharmD programme. This finding is important and aligns with Jungnickel et al.'s (2009) conclusion, which indicates that it is important to integrate practical placements constantly throughout the curriculum, rather than introducing them as components segregated from the rest of curriculum. This integration is important for the active interaction between the theoretical components and practical placements in shaping the resultant competencies of students (Jungnickel et al., 2009).

Finally, horizontal integration between what is taught in the classroom in the BSc and PharmD programmes and what is practiced in placements in the PharmD programme was not as strong as expected for successful implementation of the CoP. This finding supports Waterfield's (2011) argument about the distance between the university and practice, where he suggested the theoretical consideration of the School of Pharmacy as a CoP to reduce this distance. Botma et al. (2015) argued that failure to transfer learning to the workplace is caused by factors related to students, or learning session design, or the workplace environment. They concluded that it is the responsibility of educational programmes to improve the transfer of learning by considering these factors while designing the curriculum, including planning the workplace learning. They made a clear link between engagement in real practice and integration between taught concepts and practice by explaining that engagement is a key phase of student learning, because it focuses on both students and outcomes. They added that student engagement facilitates the integration of taught content and applied tasks, which demonstrates that students have mastered the content and become skilful. Finally, it is worth noting that collaboration between fundamental science faculty members and clinical faculty members is one of the main facilitators for achieving this integration, which again signifies that collaboration is important in the design and implementation of a CoP-based educational programme. One way to achieve this collaboration is increasing the awareness of science and clinical faculty members about the importance of both the scientific concepts and the clinical application within the clinical setting (Austin and Duncan-Hewitt, 2005; Waterfield, 2015).

## b. Teaching strategies (TS)

The second education process pillar in CoP framework is teaching strategies. The focus in this section is teaching strategies in the practice-based element, as discussed in Section 5.7.2, B.

### *VII. Propositions of teaching strategies section*

#### TS1: Learning environment

An appropriate learning environment can be achieved by adopting teaching strategies that enhance student collaboration with other healthcare providers, develop their belonging and identity, and support their shift in CoP participation from peripheral to central, as discussed in Section 5.7.2, B.

Facilitating a learning environment and culture of professional behaviour and harmony between different members is one of the new CCAPP accreditation standards, as suggested in the CCAPP-new-D. Nevertheless, it is the responsibility of the academic institution and CoP team, including faculty and preceptors, to establish an appropriate practical placement environment, which enables the development of professional behaviour and harmony between different members, as suggested by the pharmacy education scholar and the CCAPP administrator in their interviews. They added that the academic institution fulfils its responsibility by selecting suitable practical placement sites that help to achieve the programme's learning outcomes and help students feel a sense of belonging. It was also argued by one PharmD programme designer that the appropriate learning environment in the QU PharmD programme was fundamental to forming the identity of students:

*'At one site they witness their mentor, and their mentor allows them to interact independently with the team, bring evidence, and be very proactive in making recommendations and caring for patients. So this might have contributed to the formation of their identity and their perceived roles.'*

S4-Interview-Designer 2

The sense of belonging and attachment was evident in the interview with the PharmD programme alumna, when she described her feelings about particular practice sites,



which made it difficult for her to leave those placement sites at the end of the placement. She argued that most students had bad experiences in community pharmacy settings, because pharmacists in these settings practice only the dispensing role of the pharmacist and not the clinical role as well, which negatively impacted student learning:

*‘Although we studied and gained a lot of skills, we are placed in community pharmacy rotations, and we only see the dispensing role of pharmacists. So, unfortunately, we start behaving like them, following the environment.’*

S4-Interview-Alumna

Preceptors play an important role in developing and maintaining a healthy learning environment through their effective mentoring of students and by enabling them to become accepted members of CoP. In the QU PharmD programme, students had various experiences with preceptors, which affected their perception of the learning environment. Some students were satisfied with the support and enthusiasm they gained from preceptors, whilst others had negative feelings about this relationship because of the pressure and the overwhelming influence of their preceptors.

**In summary, data indicates that the learning environment was generally supportive in facilitating student collaboration with other healthcare providers and enhancing their sense of belonging and professional identity. However, the effect of preceptors on the learning environment was variable, as will be further discussed in Section TS5. While some preceptors demonstrated support of student learning, others had a negative effect either by overwhelming students or by performing the dispensing role of the pharmacist instead of the clinical role within the community pharmacy practice context. The roles of preceptors should be enhanced so that they act as role models and contribute to the success of the learning environment, as will be discussed in Section VIII.**

#### TS2: Mentoring strategies

Planning student support through progressive mentoring strategies that are based on competence development and active engagement in learning is the second proposition

regarding teaching strategies. These mentoring strategies were explained in Section 5.7.2, B.

The significance of applying and integrating a variety of mentoring strategies in an educational programme to reach the desired outcomes is discussed in the CCAPP-new-D, however, this document does not explicitly describe appropriate strategies for practical placements. These active mentoring strategies demonstrate a shift in the teaching paradigm from a model based on theoretical concepts to a model that is based on actively engaging and involving students in their learning, as described in some PharmD programme documents:

*‘The College of Pharmacy uses an innovative, ability-based curriculum and a student-centred approach to teaching and learning.’*

Design-D

It is worth noting that the description ‘student-centred approach’ lacked explicit reference to a specific pedagogical model or theory. As noted in Section C3, there was no strong evidence to adequately support this description, so while identifying student needs and goals took place, meeting them did not happen consistently.

Preceptors, who are important players in student learning, should understand different mentoring strategies, so that they apply them structurally and consistently, and evaluate their effectiveness. The pharmacy education scholar noted that understanding mentoring strategies is not adequate, and should be coupled with an understanding of student learning styles:

*‘Mentorship works most effectively when mentors have a good understanding of the learning styles of individual learners, and shape the mentoring experiences around those learning styles. We need to train our mentors to better understand learning style theory, and to help students in the way that they need to be helped.’*

S4-Interview-Scholar

The scholar added that mentors should be sensitive to a student’s preferred learning styles:

*‘Not all students are going to learn most effectively in that kind of integrated or experiential way. So we need to be sensitive to the idea that some learners might not want to learn in that way.’*

S4-Interview-Scholar

Unfortunately, this understanding and the structured application of mentoring strategies were not evident in the PharmD programme, as argued by the PharmD alumna. She explained that some preceptors appeared to progress naturally between different strategies from one week of placement to another, without explicit planning for this natural progression. Most students reinforced this view, explaining that the application of mentoring strategies was not standardised and was dependent on individual preceptors. Similarly, the majority of preceptors explained that they used to instinctively assign graduated tasks to students based on the rotation week:

*‘I am doing things gradually. When the student comes, I give her what will be she doing her for the first week, and what is expected from her. This also happens in the second, third and fourth weeks. We are doing that, but without the title “teaching strategies”. We are doing that naturally.’*

S4-FG-Preceptors

Another preceptor further explained the gradual mentoring strategy adopted:

*‘For example, in the first week, students should not go to the clinical round alone. In the second week, if students want to make any intervention, they should ask me in advance.’*

S4-FG-Preceptors

The preceptors’ lack of knowledge about mentoring strategies was further articulated by most faculty liaisons, as illustrated in the following example:

*‘I don’t think that preceptors know the differences between coaching, mentoring, shadowing, or even planning constructive feedback. I might be wrong. But I don’t know if they have been trained in that.’*

S4-FG-Faculty

Academic programmes are responsible for teaching educators about learning theories and structured teaching strategies, however, the PharmD alumna explained that in her

recent experience as a preceptor, she was disoriented and struggled in mentoring students. She added that the programme did not provide formal orientation to preceptors about mentoring strategies or planning them based on a student's level of competence. In response to the problems associated with the lack of consistent mentoring practices, one of the PharmD programme designers explained that the inconsistency between preceptors resulted from their different backgrounds:

*"There is a diversity of inherent expectations that preceptors have. I don't know how to override these inherent expectations, since they could be based on their own knowledge, or previous experience with other students."*

S4-Interview-Designer 2

The other Pharm D programme designer acknowledged the need for change:

*'We are definitely in a phase where there is a need for focused group activities aimed at advancing the understanding of mentoring techniques.'*

S4-Interview-Designer 1

**The above data clarifies that some preceptors have naturally applied progressive mentoring strategies based on the practical placement week. However, explicitly progressive and planned mentoring strategies, which are based on student development, were not consistently applied and were not evident in the PharmD programme by all preceptors, in spite of the use of pedagogical terminologies in some documents. The programme did not orient or instruct preceptors in mentoring strategies, which led to inconsistent mentoring approaches from different mentors. Recently, the PharmD programme has started to recognise the significant role of preceptors and to think about orienting both faculty and preceptors to mentoring strategies and student learning styles. This orientation facilitates a healthy learning environment and student engagement in their learning, which is based on their diverse learning needs, as will be discussed in Section VIII.**

### TS3: Shadowing

The third proposition is shadowing between practice preceptors and academic faculty liaisons to ensure that concepts taught in the classroom and practice sites are aligned and integrated, as discussed in Section 5.7.2, B.

Faculty liaison visits to practice sites could be used as opportunities for faculty to shadow preceptors in their practice, which could subsequently provide the opportunity to engage in discussions and share ideas about curriculum, teaching, and assessment methodologies. In the PharmD programme, these visits were considered beneficial for supporting student learning in practice and to give feedback to mentors about their teaching, as explained in the Self-study-D. However, these visits did not happen as frequently as needed, as noted by the PharmD alumna:

*‘I remember they used to come, but not that frequently. They used to attend the clinical round, but not in every rotation. Maybe it needs to happen more frequently so that they are aware of what is happening in the practice.’*

S4-Interview-Alumna

The majority of preceptors, as demonstrated in the following example, supported this view:

*‘Before, when we started with the first cohort of students, faculty liaisons used to come every week to attend the round with us. Now, we hardly see faculty every month. They come only for 15 minutes. I remember one faculty came for 5 minutes and said that they had a meeting, and needed to leave.’*

S4-FG-Preceptors

The lack of frequent and structured visits by faculty liaisons, as noted by most students in their FG, could potentially restrict the achievement of the ultimate goals of shadowing. While reciprocal shadowing is expected to take place, the following quote, which represents the majority of student perspectives, suggests that it did not happen:

*‘The opposite never happened, like having preceptors visit the college to attend classes. I never saw that during my PharmD.’*

S4-FG-Students

This lack of reciprocal shadowing could further limit the benefits of shadowing.

**A major finding pertaining to shadowing in the QU PharmD programme is that faculty liaison visits to practice sites were conducted occasionally, inconsistently, and mostly for the purpose of overseeing student learning progress, rather than to ensure alignment with the classroom. Reciprocal shadowing did not take place, which also affected the relationship and collaboration between faculty and preceptors in other important aspects of the education process, such as curriculum planning and assessment, as discussed in Sections E4 and C4 and as will be discussed further in Sections VIII and A4.**

#### TS4: Peer support

The fourth proposition centres on reinforcing the social nature of learning through peer support. Peer support was explained in Section 5.7.2, B. It can be implemented by developing relationships with students in other years, which took place in the QU PharmD programme through tailored initiatives:

*‘We developed the big sister, little sister initiative. The intention was to improve communication between the early- and later-year students within the undergraduate programme. We also developed the first student society as an opportunity for mentorship between students.’*

S4-Interview-Designer 1

The PharmD programme also planned to structurally involve graduate students in formal peer advising, as illustrated by the following extract:

*‘Faculty advising will continue and include an advisor paired with two or three graduate students (a mix from the full-time and part-time programmes), who will additionally serve as a formal graduate student peer support team.’*

Self-study-D

**The limited available data about peer support suggests that it was implemented in an unstructured manner. However, there are future plans to structurally and formally implement it through graduate peer advising. These plans could**

**indicate the programme's recognition of the significance of this element in supplementing a healthy learning environment, as will be discussed in Section VIII. The implementation of these plans should be followed up and evaluated in future studies.**

#### TS5: Social and professional acceptance

Social and professional acceptances are linked because social acceptance and the presence of students at the practice site facilitate familiarisation, which gradually increases student confidence, which in turn increases the competence expected for professional acceptance, as discussed in Section 5.7.2, B.

In the QU PharmD programme, the social acceptance of students was facilitated by preceptor communication with medical and nursing teams to introduce PharmD students when they commence their practical placements, as explained by most PharmD preceptors. One of the preceptors added that she learned this practice from her preceptor when she was a student. The PharmD alumna argued that this practice was not standardised among all preceptors at all practice sites. Some students in the FG supported the alumna's perspective and commented that they finished the complete rotation without being introduced to the pharmacy staff. This lack of consistent practice by preceptors suggested that it is the PharmD programme's responsibility to reinforce the significance of social acceptance and orient preceptors to the best practices associated with it.

Professional acceptance is an outcome of social acceptance, however, it requires familiarity with the context of a respectful, engaging environment, as argued by the pharmacy education scholar. In the QU PharmD programme, the majority of PharmD students suggested that they had been professionally accepted, but indicated a previous gap between physicians' familiarity with the presence of pharmacy students and that of medical students in the clinical round:

*'Physicians are becoming more accustomed to the presence of PharmD students in the team, although they are used to training medical students but*

*not PharmD students. Now, because they see us around all the time, they have kind of taken responsibility for our training.'*

S4-FG-Students

Another student added:

*'Physicians are getting more familiar with the role of clinical pharmacists in the team, and with their contribution. Many physicians started to ask us questions as assignments, so that we research the answer and come back to them with the answer. It is our responsibility to do that. So it is a team job.'*

S4-FG-Students

These quotes reflect evidence of application of the inter-professional education (IPE) concept, in which pharmacy students learn together with other health profession students within a healthcare providers team. While CoP theory focuses on collaboration and identity formation between community members who share the same practice domain, such as pharmacy, it considers social and professional acceptance by healthcare professionals and society an important element for its successful implementation.

With that in mind, some document extracts about ability to work with in intra- and inter-professional teams are presented below as evidence for the significance of professional and social acceptance in the PharmD programme. For example, the Outcomes-D suggested that one of the learning outcomes for students is being able to work collaboratively with the healthcare team, which implies that they are professionally accepted by the team. The CCAPP-new-D reinforced the significance of teaching students to work with other healthcare professionals:

*'Pharmacists must be able to work with people of different cultures who have different values, beliefs, and customs. They must be able to become trusted and respected members of the communities in which they work and provide support to students and new health providers. They must practice with compassion, empathy and integrity and they must be able to work in intra- and inter-professional teams and be adaptable enough to work in a variety of settings.'*

CCAPP-new-D



In the above extract, the significance of being able to deal with intra- and inter-professional teams is stressed, with equal significance and stress given to being able to deal with different cultures.

The Self-study-D demonstrated, inspirationally, that PharmD graduates were interacting directly with different kinds of people in the Qatari community. However, one preceptor noted that the culture of patients in the Middle East is not supportive of professional acceptance. He added that patients generally do not trust pharmaceutical care provided by students, and they assume that students should practice only under supervision, which makes them reluctant to accept counselling from them. It is the responsibility of the PharmD programme to help both preceptors and students to deal wisely and collaboratively with this culture so that the professional acceptance of students is not jeopardised.

**It seems from the presented data that the significance of social and professional acceptance was explicitly and implicitly recognised and stressed by the accreditation agency and the AFPC in Canada. It also seems that QU PharmD students were generally accepted socially and professionally. This was facilitated by the development of the IPE concept in the QU BSc programme from which PharmD students graduated. Hence, students experienced wider exposure to other healthcare professionals and students, but this IPE is not yet fully planned and integrated into the PharmD curriculum and there is scope for further work on its integration. It is worth noting that the academic programme is responsible for orienting preceptors to consistent practices that improve the social and professional acceptance of students, and help in dealing with the culture of patients who lack confidence in students, as will be discussed in Section VIII.**

#### TS6: Cognitive apprenticeship

The concept of cognitive apprenticeship was not discussed explicitly during data collection, as the discussion focused on broader mentoring strategies that represented concepts derived from the cognitive apprenticeship concept.

### *VIII. Discussion of teaching strategies findings*

The findings suggest that some elements of CoP teaching strategies were generally implemented in the PharmD programme. For example, the learning environment was generally healthy, facilitating student collaboration with others and enhancing their sense of belonging and professional identity, with some inconsistent practices among preceptors in different practice sites. Van Huyssteen and Bheekie (2015) support the significance of identity development in their study about the identity development of first-year pharmacy students. They explained that professional identity is demonstrated by an increased feeling of belonging to the pharmacy profession, however, there is a constant shift in professional identity throughout a student's course of study and professional career, which is an important part of the identity development process. This conclusion supports Kislov, Harvey and Walshe (2011), who argue that core identity is stable and extended identity is modifiable, based on broadening or changing the scope of work, skills, knowledge and values. Hence, enforcing the professional power of other groups, collaboration and autonomy affects professional identity.

The data suggests a need to improve consistency across sites and placements, in terms of the preceptor's role, support and relationships with students. Wilbur, Paiva and Black (2015) explained the lack of satisfaction that QU PharmD students had with the preceptor teaching as because students are inexperienced with the teaching style of preceptors, which is different from that of the faculty liaison. However, this justification reinforces the role of the QU PharmD programme in preparing preceptors for their teaching roles.

Several authors in professional healthcare education stressed the important role of preceptors and their relationship with students, highlighting key characteristics of those preceptors. For example, Bates et al. (2013) explained that a healthy relationship between students and preceptors results in a healthy learning environment, which is characterised by focusing on learning goals rather than performance goals. Focusing on learning goals encourages students' enthusiasm about their learning and their acquisition of skills. Focusing solely on performance goals

leads to judgement on students' competence, which could negatively impact their desire to learn, if it is the main focus.

Goldie et al. (2015) argued in their exploratory study about good clinical students and teachers that good clinical mentors are role models, competent, skilled in teaching and have good interpersonal skills. Frankel, Louizos and Austin (2014) added more characteristics of effective mentors, such as commitment, interest in performing the mentor role and the ability to counsel learners about keeping a balance between their individual and career life through productive discussions. Reflecting on constructivist theories, Juvova et al. (2015) explained that effective teachers in professional education should have a strong knowledge foundation in curriculum content, soft skills, self-confidence, flexibility and should demonstrate an ethical attitude. Lastly, Sadideen and Kneebone (2012) explained that the trainer plays an important role in the learning environment. When instructors only use traditional teaching strategies and push students beyond their ZPD, or when they lack enthusiasm and positive personal traits, they negatively impact a student's motivation to learn. Unfortunately, the workplace environment is not always supportive of learning, which could be attributed to issues either in the workplace systems, or in the professionals working in these workplaces (Sadideen and Kneebone, 2012). Other factors could affect the workplace environment and student learning, such as role ambiguity, staff shortages and heavy workloads (Botma et al., 2015).

The findings also suggest that peer support was given in the programme in an unstructured manner. There are plans to make peer support more structured through graduate student advice within CPH in QU. Structuring peer support initiatives was highlighted in the pharmacy education literature by Frankel, Louizos and Austin (2014), who suggested adopting the medical education model in pharmacy education by allowing senior pharmacy students to structurally mentor and teach junior students, under the supervision of a pharmacist.

Data from this study clarifies that the concept of social and professional acceptance was developing in the QU PharmD programme, however, the implementation of this concept was not always consistent. Preceptors should be oriented to consistent practices that enhance the social and professional acceptance of students, such as

encouraging student participation. This finding is consistent with Hägg-Martinell et al.'s (2014) argument that student participation allows them to feel that they are part of workplace culture and that they are expected to contribute to their CoP, which ultimately motivates them to gradually increase their professional competence. They added that preceptors, with their welcoming behaviours, are usually responsible for motivating students to participate and become accepted in their CoP.

The data suggests that when there is social and professional acceptance in the practice site, it was enhanced by previous IPE activities in the BSc programme from which PharmD students graduated, as well as from the current unplanned IPE activities in the PharmD programme through clinical rounds. Engagement with the healthcare team is one of the key components linking the IPE concept with CoP theory, in addition to imagination and alignment (Lees and Meyer, 2011). From CoP point of view, engagement allows students to be active in their learning, self-motivated and responsive. From the IPE perspective, engagement allows different healthcare professionals to learn from each other and reflect on their own practice (Lees and Meyer, 2011). In pharmacy education, Frankel, Louizos and Austin (2014) described a bidirectional approach to IPE between medicine and pharmacy students, where they interact and learn from each other. Through this approach, pharmacists taught the medical residents parts of their educational content and collaborated in patient care activities.

The findings of this study suggest that some preceptors implicitly applied different mentoring strategies that were based on progressing student tasks according to the rotation week, without formal orientation and knowledge about these strategies. This finding is consistent with Nilsson et al. (2010), who argued that mentors generally learn teaching strategies traditionally and not purposefully during their clinical mentoring of students. They noted that clinical teaching is complex and composed of a spectrum of different teaching strategies, such as lecturing, supplementing, demonstrating and intervening, which are selected by mentors based on student level, clinical situation, and the mentor's preference. They concluded that mentors should learn these pedagogical teaching strategies to align them with the diverse needs of students, which enhances the overall learning experience (Frankel, Louizos and Austin, 2014).

The findings also suggest that faculty liaisons used to visit practice sites inconsistently for the purpose of mentoring and monitoring preceptors. These inconsistent visits could be associated with the lack of guidance in the literature about the appropriate frequency of visits (Wilbur, Paiva and Black, 2015). However, the findings imply that reciprocal visits and shadowing for the purposes of building relationships and bridging theory and practice did not take place. This affected the important collaboration between preceptors and faculty as regards curriculum, teaching, and assessment. Wilbur, Paiva and Black (2015) argued that in the QU PharmD programme, preceptors and students perceived the role of faculty liaisons differently. For example, students preferred a facilitation role for liaisons, while preceptors preferred an observation role during their visits.

The significance of shadowing was emphasised by Roberts (2015), who commented that therapists prefer shadowing, discussions and connections with peers, mentorship and other activities in CoP, over formal training or courses. He noted that therapists perceived those activities as facilitating reflections on practice. The data suggests that the programme should create channels for collaboration between preceptors and liaisons, such as more consistent and reciprocal shadowing, which will make preceptors a positive addition to the programme rather than a barrier to the learning process. This recommendation is in agreement with the conclusion of Frankel and Austin (2013) about major barriers to advanced pharmacy practice. They recommended that academic pharmacy programmes should pay more attention to the professional development, training and assessment of preceptors, otherwise, preceptors could act as barriers to effective experiences.

Finally, it is worth mentioning that the role of preceptors is key to the successful implementation of all the above teaching strategies and should be given more attention by the programme. McAllister, Oprescu and Jones (2014) argue that it is important to support novice nurse educators during their transition from the clinical role into the educator role. This support could be achieved through exchanging expertise and resources with experienced nurse educators, which reduces their sense of isolation, and by conducting professional development activities, which aim to help educators meet the expected challenges. Exchanging expertise and professional development activities enhance the satisfaction of nurse educators, which results in

positive learning experiences for students. It seems from the findings that this important role of preceptors could be enhanced by structurally orienting them to the significance of a healthy learning environment. The preceptors role could also be enhanced by training them about mentoring strategies and how to plan those strategies based on student competence, and by providing them with best practices to facilitate the social and professional acceptance of students. Preceptor training is necessary, because they were not trained as educators. Burton, Boschmans and Hoelson (2013) explained that most pharmacy educators were originally trained as pharmacists, not as teachers or educators. Some of these pharmacists demonstrate proficiency in their professional roles, but their teaching skills have been developed by experience, rather than through academic knowledge and research. Hence, those pharmacy educators can become confused about their professional identity, which negatively affects their success as educators.

### c. Assessment (A)

Student assessment is the third education process pillar and one of the key functions of education.

### *IX. Propositions of assessment section*

#### A1: Develop the expertise and experience of educators in assessment by orientating them to the assessment system

The first proposition regarding assessment focuses on orienting newly appointed educators and preceptors to the expectations of the assessment system and developing their understanding of the assessment process, as explained in Section 5.7.2, C.

The CCAPP administrator and the pharmacy education scholar both confirmed that the PharmD programme should ensure that preceptors are interested in performing the preceptor role before orienting and mentoring them to assessment practices, as exemplified in the following quote:

*‘First thing we need is to identify mentors, who want to be mentors. Frequently, people are forced to be mentors by their employers or because of*

*external reasons. If these are the reasons, then they are probably not going to be very happy or effective mentors.'*

S4-Interviews-Scholar

In the QU PharmD programme, faculty liaisons were responsible for mentoring preceptors, as illustrated by the Self-study-D, and in the following extract:

*'Full-time clinical faculty regularly conduct practice site "faculty liaison sessions" with the clinical preceptors and students. These sessions are designed to provide mentorship support, discuss therapeutic and professional issues, and ensure internship quality control.'*

Preparation-D

One of the PharmD designers explained that during these visits, faculty liaisons and the preceptors discuss student performance, assessment expectations, and grading.

To orient preceptors to structured assessment activities, the PharmD programme registered and subscribed PharmD preceptors to online preceptor training courses, which they can attend in their free time. These courses were considered a great opportunity by some preceptors, as they noted in their FG, however, attendance at these workshops was neither mandatory nor rewarded, which reduced the compliance and interest of some preceptors. The majority of faculty liaisons suggested developing mandatory on-campus training and orientation sessions for preceptors to solve this problem, as illustrated in the following quote:

*'We do not have on-campus preceptor training sessions or workshops. However, we do have online preceptor training sessions, in which preceptors can log in and select a specific programme to view and take. But it is all up to them. We do not mandate them to take these sessions.'*

S4-FG-Faculty

The alumna, who recently became a preceptor, suggested that the training and workshop sessions should give special consideration and attention to preceptors who used to be QU PharmD students:

*‘I think that this group should receive an orientation on how to deal with the transition or how to act as preceptors after being former students. In the beginning, I struggled with putting myself in the preceptor’s point of view.’*

S4-Interview-Alumna

**It seems from the data that all stakeholders of the programme understood the significance of mentoring and monitoring preceptors about assessment. However, in spite of the assignment of faculty liaisons to undertake this responsibility and the provision of a free subscription for preceptors to online workshops, it appears that structured orientation, training, and mentoring did not take place. The PharmD programme should make more focused efforts to orient preceptors to their tasks, which collectively could stimulate their key role in student learning and assessment. This will be discussed further in Section X.**

#### A2: Validity and reliability of assessment tools

Ensuring the reliability and validity of assessment measures is essential for making the right decisions about student progress, as explained in Section 5.7.2, C.

The CCAPP-new-D suggested that assessment methods should be valid, reliable, and applied in a systematic and sequential fashion. They should also be gradually applied throughout the professional educational programme to ensure their suitability for each placement and competency. In an interview with one of the PharmD programme designers, it was noted by the interviewee that the assessment tools used by preceptors in mid- and endpoint evaluations were simple to use, sensible, and precise for grading students. These assessment tools were constructed from and guided by other assessment tools in other PharmD programmes worldwide, as argued by some faculty liaisons, which made them valid tools:

*‘Well, I think that the tool has been constructed and guided by other assessment tools in other PharmD programmes worldwide. So there are similarities. Most programmes that I have seen have mid-point and final evaluation in them. So I think that they are valid tools.’*

S4-FG-Faculty



Validating assessment tools in Canada does not ensure their validity in the Qatari context, however, as noted by most faculty liaisons:

*‘I think they were adopted from Canada, so in the Canadian context they are valid. But I am not convinced that they are valid in the Qatari context. I think that they should be reassessed.’*

S4-FG-Faculty

These tools have been aligned with the practice in some countries, but there is no evidence about their suitability for other contexts and countries, specifically in Qatar. This lack of reliability and validity testing may mean that some of their elements are inapplicable:

*‘The tools for the appraisal or assessment of students given by the college go into too much detail. Some of these details are not applicable to all practice places. For many sections, I don't know what to write, so I put “not applicable”.’*

S4-FG-Preceptors

When asked about testing the reliability and validity of the assessment tools, one of the PharmD programme designers confirmed that this did not take place in the first few years. At that time, testing was not a priority because the programme team made the assumption that they were adequately valid and reliable for their purpose, and because they were not looking at them in a scientific fashion, but validity was ensured for other assessment practices. For example, the development team of the OCE undertook the following process:

*‘Each case and answer key for the exam goes through an extensive development and evaluation process to ensure validity and defensibility.’*

Self-study-D

**The data reveals that ensuring the reliability and validity of assessment tools was not a priority for the PharmD programme at its inception, and thus did not take place consistently and systematically. While a few respondents felt that the assessment tools were valid because other PharmD programmes used them, most respondents agreed that this did not guarantee their validity and suitability in the local context. Ensuring the reliability and validity of assessment tools**

**recently became one of the new CCAPP accreditation standards. Thus future efforts should be made to test the validity, reliability, and applicability of the assessment tools in the Qatari practice context, as will be discussed in Section X.**

### A3: Authenticity of assessment tools

Authentic assessment tools are key in the PharmD programme because the majority of learning takes place at real practice sites, as explained in Section 5.7.2, C.

The CCAPP-new-D suggested that appropriate methods should be employed to evaluate student progress in performance, competence, and achievement throughout the curriculum and practice experiences. This implies that authentic assessment tools should assess their practice experience, however, one of the PharmD programme designers demonstrated uncertainty about whether the assessment tools used in QU PharmD programme were authentic:

*‘Whether these are the best evaluation forms in terms of authenticity or reliability or validity, I am not so sure.’*

S4-Interview- Designer 2

Preceptors use the evaluation tools, adopted from the Canadian programmes, when they observe real student performance at the practice site, which potentially makes them authentic tools. However, involving preceptors in the design and testing of the tool could make it more appropriate to the Qatari setting and thus more authentic, as discussed in Section A2. Most preceptors stressed the significance of assessing students accurately at the mid- and end points of the practical placement:

*‘We should evaluate the student on what they are actually scored for, and at exact performance levels. Of course, I agree that if a student’s level moves up by the end of the rotation, then the improved performance should be scored.’*

S4-FG-Preceptors

Students are assessed during the PharmD year by OCE, as explained in Section 1.4.3. In this exam, student clinical skills and competence are assessed through hands-on real patient cases, as described by the following quote:

*‘The goal is to try to put students in an OSCE like setting, eventually, and to assess students’ competency, as a final exercise prior to graduation, which makes it a critical assessment.’*

S4-Interview- Designer 1

**The above data suggests that the PharmD programme aimed to implement authentic assessment tools, however, each of these tools has problems, which need attention. For example, as discussed in Section A2, the assessment tools used by the preceptors at mid- and end points need to be validated within the Qatari context. Other issues involving the OCE, which also suggest a need for evaluation improvement in the tool and process, will be discussed in Sections A4 and X.**

#### A4: Collaboration between academics and practitioners in assessment

The collaboration between academics and practitioners in assessment facilitates expertise exchange and future initiatives in the area of assessment, as discussed in Section 5.7.2, C.

In the QU PharmD programme, the Design-D suggested that there was collaboration in assessment between several stakeholders:

*‘Assessments will be undertaken by instructors, course coordinators, cross-appointed faculty members, the programme director, and others who may be associated with the mentorship of these students.’*

Design-D

Preceptors were not mentioned as collaborators in the extract, reinforcing a lack of understanding of the significance of collaboration between academics and practitioners in the area of assessment. There was also no collaboration between preceptors and faculty liaisons in designing assessment tools and methods, as confirmed in the interview with one of the PharmD programme designers. Instead, mid- and endpoint assessment tools, which are major assessment tools, were given to preceptors to evaluate students. One of the PharmD designers noted that preceptors

alone complete these evaluations, and faculty liaisons become involved only in very special circumstances. In this regard, most faculty liaisons noted that collaboration in assessment was more evident in Canada and suggested being more involved in the Qatar PharmD at mid- and endpoint assessment. The following quote illustrates this:

*'I guess it would be better if we could put something in the midpoint evaluation, because we are involved in the liaison visits, so we could be more involved in the assessment.'*

S4-FG-Faculty

The other major assessment method used in the PharmD programme, OCE, was planned and conducted solely by faculty liaisons in the first few years of the PharmD programme, as argued by the PharmD alumna, without collaboration from preceptors. This was problematic, because preceptors could not align their teaching strategies with the expectations of this important assessment. She added that collaboration over this tool has improved in the last few years, which would increase its authenticity:

*'Preceptors identified weakness in more than one student. Accordingly, they started to involve preceptors in the college, in scoring exams or even in creating the cases for the OCE.'*

S4-Interview-Alumna

**It appears that the collaboration in assessment between faculty liaisons and preceptors did not seem to be implemented in either planning or delivery. Some tools were designed solely by faculty and used solely by preceptors. Others were designed and conducted solely by faculty. Key documents lacked explicit reference to involving preceptors in assessment, which indicates a lack of understanding of their significance. This limited collaboration between academics and practitioners was previously and will be further noted in other CoP framework sections, which indicates a major problem, as will be further discussed in Section X.**

#### A5: Well-planned assessment activities

It is essential to ensure well-planned assessment activities that are proactive, self-directed, policy-oriented, and regularly evaluated, as discussed in Section 5.7.2, C.

In the interview with the CCAPP administrator, it was argued that assessment activities for student competency are the foundation of the curriculum, and therefore in planning assessment activities each competency should be evaluated differently. For example, assessing professionalism is different from assessing communication, which is different from assessing pharmaceutical care competency.

In the QU PharmD programme, several decisions had to be made carefully while planning assessment activities. One of these decisions, as noted by one of the PharmD programme designers, was the frequency of evaluation during each placement. He noted that they decided to evaluate students at the mid- and endpoints of the placement, so that students were alerted about any performance problem that might restrict their outcome achievement ahead of time, giving them an opportunity for improvement. Another decision was about grading students:

*‘At the beginning of the programme, we decided to adopt the pass/fail model. The reason for that was multiple: one of the reasons is that we had problems with grades in the North American environment, particularly with a competitive group of students, who not only wanted to pass, but wanted an A.’*

S4-Interview- Designer 1

Recently, the PharmD programme worked with the QU PLOAC to plan the assessment of specific competencies, which indicates the evolving assessment activities and plans:

*‘Last year, the PLOAC wanted to look at patient advocacy, and they wanted to look at it in one of the rotation placements. Dr Y was the PLOA liaison for the PharmD at that time, so he made a supplemental patient advocate assessment form, and had the preceptors in that particular rotation complete it. So Dr Y met with all of preceptors, made small orientation to the form, and answered questions.’*

S4-Interview- Designer 2

Students and assessors should both be oriented to assessment activities. These orientations increase the confidence of new assessors in their abilities, ensure standardised assessment practices, and prepare students for assessment, as indicated by the CCAPP administrator. However, on occasion, there appeared to be inadequate orientation of students to the conditions and context of some assessment tools, such as the OCE:

*‘Most of us used to enter the exam without being aware of what would happen in it. We knew that it would be like three stations, but we were not sure what would happen in each and what we were expected to do. So we were a bit disoriented.’*

S4-Interview-Alumna

It is important that students understand how an exam is to be administered so there is a continuum between knowledge, theory and practice, as indicated by the following quote:

*‘It is important to determine what to be assessed during the placement, so the assessment part is in line with what students were prepared to do when they were within the university, while little extending beyond that in order to bring real life situations and scenarios to what they learned within the university.’*

S4-Interview-CCAPP Administrator

**It seems that the PharmD programme generally considered several potential options and constraints before making the main decisions about assessment activities, which indicates a thoughtful and evolving planning of assessment. However, occasionally students were not adequately oriented to some assessment activities. This could have potentially affected student readiness and performance, and therefore orientation sessions should take place for assessors and students, as will be discussed in Section X.**

#### A6: A balanced and comprehensive assessment system

The subsequent proposition for assessment is about ensuring a balanced and comprehensive assessment system that contains both summative and formative methods, as explained in Section 5.7.2, C.

A key benefit of having both formative and summative assessments is ensuring a balanced assessment system that is able to grade students periodically, as described in the CCAPP-new-D. The CCAPP administrator also explained that ongoing formative assessments ensure that each element of competency is assessed multiple times. Problems identified in competencies will thus be the priority in redesigning the curriculum.

The following extract identifies assessment tools used in the QU PharmD programme, which shows that they were more focused on summative assessment:

*‘Student academic performance is evaluated using similar pedagogical methods to those being followed in the BSc (Pharm) programme and other PharmD programmes. Student evaluation for didactic courses is based upon pre-class preparedness, in-class/online contributions, assignments, midterm and final written exams, and case presentations. Student evaluation in research activities is based upon an understanding of the research project, work habits and reliability, data collection, analysis, and the production of final reports. Student evaluation for the advanced internships involves midpoint and final rotation assessments in accordance with specific rotation learning objectives.’*

Design-D

Faculty liaisons further explained that the mid- and end -rotation evaluations and the OCE were formal assessments, and that informal assessments were conducted through faculty liaison visits, preceptor discussions, and case presentations. Some preceptors argued that the assessment forms should be different at mid- and endpoint, so that they assess different performance levels:

*‘I think the mid-rotation evaluation should be a little bit different from the final evaluation, because performance at two weeks is completely different*

*from performance at four weeks. The current evaluation form has the same questions for both.'*

S4-FG-Preceptors

Other preceptors indicated that it is important to evaluate a student's change in performance over time, if any, and hence the same tool should be used at mid- and endpoint assessments:

*'I agree on the structure of the evaluation form now, where the same questions are used at mid-point and final evaluation forms, because we need to evaluate the improvement. Also, I agree with you that we should expect an improvement in students levels to happen, and to appear in the evaluation form.'*

S4-FG-Preceptors

However, neither faculty nor preceptors explicitly mentioned or elaborated on formative assessments, which could potentially reflect their limited understanding of the significance of this kind of assessment. However, the following quote suggests that formative assessment was implicitly applied in the PharmD programme by identifying student strengths and weaknesses sequentially, so that they set their own learning goals:

*'Sometimes we used to identify some weaknesses that we needed to improve upon during the second rotation. Sometimes we also used to identify a strength that we needed to reinforce in the coming rotations.'*

S4-Interview-Alumna

**The description of the assessment system in documents and by respondents suggests that summative assessment was more explicit, recognised, and implemented in the PharmD programme. The stakeholders of the PharmD programme, including students, should be formally and practically oriented to the significance of formative assessment in goal setting and curriculum planning, as will be discussed in Section X.**



#### A7: Best-practice assessment systems

The seventh proposition is about being exposed to the best practices and new approaches to assessment that have been applied by other programmes and then applying them within the relevant context, as explained in Section 5.7.2, C.

It is essential that educational programmes seek advice about different pedagogical areas, including assessment, from experts or experienced faculty members in other universities, as suggested in the following quote:

*‘I think it is very important from the beginning that there is a representation from different disciplines. It is also very important to have involvement from a consultant or someone within a faculty in a different university, who has experience in curriculum or active learning strategies or different assessments. There is a need for some expertise to speed up the process.’*

S4-Interview-CCAPP Administrator

In the QU PharmD programme, students are evaluated by OCE, as indicated in Section A3, which is an OSCE like exam implemented in peer organisations in Canada. Selected faculty members in CPH received training in OSCE in Canada, and two Canadian experts in OSCE joined QU to help the conduct of OSCE in the BSc programme. Several faculty liaisons and preceptors in the PharmD programme were involved in this OSCE process as an entry-to-practice in Qatar, and produced scholarly work to evaluate its success (Reardon et al., 2016; Wilby et al., 2016). Also, following best practice was demonstrated by evaluating students at the mid- and endpoint, which was adopted and adapted from the designers’ previous experience in the Canadian system:

*‘Different items in our evaluation forms fit into the 7 NAPRA learning outcomes. This came from the Canadian influence. We went from having a raw score in the form to a pass /fail system. This decision was again informed by best practices, following assessment in other PharmD programmes. I personally liked it, because it takes the emphasis on the numbers and shift it to the overall learning experience, and performance as a whole.’*

S4-Interview- Designer 2

This reinforces previous findings, in Sections E2 and A2, about implementing benchmarking and about the validity of the assessment tool in other contexts. However, as indicated in Section A6, different preceptors had different perceptions about using the same tool at mid- and endpoint evaluations, which indicate their lack of understanding about the utility of this tool and about formative assessment.

Recently, the programme began to recognise the significance of collaboration between faculty liaisons and preceptors in assessment as a best-practice approach. This was illustrated in the most recent programme document in 2015:

*‘Faculty liaison visits are now structured and faculty members actually assess students alongside preceptors in order to provide “best practice” when assessing students on activities such as topic discussions and patient case workups.’*

Self-study-D

**It is clear that the programme team recognised the significance of adopting best-practice approaches to assessment, and therefore the programme adopted assessment tools that have been used in Canadian universities. The programme designers also decided to assess students at the mid- and endpoints, which is the case in some Canadian and American universities. To ensure that best practices are used, the CPH have recently sought guidance from external experts and peers regarding the planning and implementing the OSCE as an entry-to-practice examination in Qatar. The above data suggests a lack of collaboration between faculty liaisons and preceptors. However, there are plans to implement collaboration between faculty liaisons and preceptors in assessment, as indicated in the most recent programme document, which is promising for solving major encountered problems, only if implemented. Hence, the programme should ensure that these plans are implemented and continue to look for opportunities to improve assessment practices.**

#### A8: Quality assurance for assessment

Implementing a quality mechanism for assessment to ensure rigour and consistency in assessment activities across practice sites is a fundamental element of assessment, as discussed in Section 5.7.2, C.

In the interview with the pharmacy education scholar, it was argued that one of the quality mechanisms involves seeking and integrating assessments and evaluations from different sources on multiple occasions. These sources include students' oneself, patients, other healthcare professionals, pharmacy technicians and other people who report to students.

One of the quality measures in the QU PharmD programme was identifying the problems or issues associated with practical placement, including assessment, by asking students to evaluate the preceptor and sites, as suggested in the Preparation-D document. These evaluations help to identify student, preceptor, and programme issues that required immediate attention to ensure that expected standards are maintained.

The programme has also planned to implement a quality mechanism similar to that implemented in the BSc programme:

*'It is basically to take all of the evaluations and categorise them in terms of the highest, average, and the range of grades for all rotations across the students for each type of rotation and each location. For example, an average student grade in the intensive care unit in Hamad General Hospital is different from an average student grade in Al-Wakra. Then look at all of the individual grade ratings in the evaluation form and as an aggregate to determine the ones that students are strongest in. In other words, evaluating the full assessment conditions. Then look for trends on an annual basis.'*

S4-Interview- Designer 1

It is important to note that most PharmD students complained of a lack of consistency between different preceptors in assessment, which could be due to the lack of faculty

liaisons' moderation of assessments conducted by preceptors. An example of the student complaints is demonstrated in the following:

*'I had a preceptor who was very difficult to please. I liked that rotation and we were on good terms, however, at the end, she was not satisfied with my performance. In another rotation, I performed almost the same, or maybe less, and at the end, I got a very good evaluation. So it depends on the preceptor.'*

S4-FG-Students

**It seems from the above data that the PharmD programme planned to apply quality mechanisms to ensure rigorous assessment practices. However, these plans were not implemented in terms of monitoring consistency across sites, particularly through the faculty liaisons' moderation of the preceptor assessments of students. These findings link back to the lack of collaboration between faculty liaisons and preceptors, (A3), and to the lack of preceptor mentoring and orientation about assessment, (A1). Ensuring quality in assessment will be further discussed in Section X.**

#### *X. Discussion of assessment findings*

The findings suggest that the PharmD programme has generally planned effective assessment activities, which consider assessment authenticity. The importance of the proper planning of assessment activities was emphasised by Janke et al. (2013), who argued that planning effective assessment methods for academic programmes provides guidelines for developing assessment practices for student learning, taking into consideration accountability and transparency. They suggested that academic institutions should plan for customised assessment methods suitable for their needs and goals, and for measures to evaluate the application of those methods.

The findings suggest that a key component of the planning, orienting and mentoring preceptors to the assessment system, did not consistently and adequately take place. This lack of structured preceptor orientation to assessment resulted in a perceived lack of consistency in assessment by students, as noted by Wilbur, Paiva and Black (2015). The lack of structured orientation and mentoring was also observed in teaching

strategies, (TS2), and therefore the programme should reinforce the significance of the preceptors' key role and invest in their training.

The findings suggest the need for a better understanding of the significance of formative assessments in complementing a balanced and comprehensive assessment system. Bates et al. (2013) supported the significance of formative assessments arguing that formative assessment should apply tools that focus primarily on student learning and needs and do not aim only to provide structured feedback. He noted that direct feedback that is based on student needs is more beneficial than structured feedback. Hence, Bates et al. (2013) suggested that direct feedback provided by preceptors to students is an effective informal assessment tool, because it is usually based on the needs of students and the level of their competence. Students tend to accept critical feedback from preceptors when they have a good relationship with them, and when they trust that this feedback aims to improve their clinical practice, rather than to judge their competence. This kind of relationship and feedback encourages the movement of students from peripheral participation to active participation.

Wilbur (2015) conducted a critical evaluation in the QU PharmD programme of the use of the OCE exam as a summative evaluation tool. In this evaluation, OCE grades did not show a correlation with the previous academic performance of students, admission grades or current academic performance. The OCE assessment lacked reliability, which could be explained by the diversity of the examining team, comprised of practitioners and faculty members. Wilbur (2015) concluded that the QU PharmD programme should develop a simultaneous formative and summative assessment for PharmD students before graduation. This reinforces the significance of formative assessment.

It seems that students were not adequately oriented to assessment activities, which could have affected student readiness and performance. Frankel, Louizos, and Austin (2014) noted that student self-assessment and reflection in action are important assessment practices in higher education, for the development of a student's critical thinking abilities. They argued that these two important practices are missing in the pharmacy curricula, which should be rectified.

The findings also suggest that the programme planned authentic assessment activities through mid- and end point evaluation by preceptors, however, these authentic assessment tools lacked validity testing for their suitability to the Qatari context and workplace. Wilbur (2015) argued that, those summative assessments conducted by preceptors lack reliability in the QU PharmD programme, because of either inadequate documentation, or conflicts of interest, or unfairness. The significance of using different assessment approaches, including authentic ones, was emphasised by Gonczi (2013). He suggested that several approaches should be integrated to assess the developed performance, knowledge, skills, clinical judgement and dispositions of students, because one assessment approach cannot examine all of those measures. Assessment approaches should assess student learning development over time, in an ongoing manner, which makes them formative approaches, and in real practice, which makes them authentic approaches. Sadideen and Kneebone (2012) stressed the significance of ensuring the suitability of the authentic tools for a practice context and setting explaining that effective assessment practices should consider two important issues, in addition to student competence. The first issue is related to the workplace system, such as: regulations and policies in the workplace, and the second issue is related to the individual's characteristics, such as: mental abilities, relationship with peers and communication skills. Considering those two issues together in planning assessment activities, in addition to student competencies, gives a real representation of student performance. Sadideen and Kneebone (2012) concluded that it is important to assess both performance, which is demonstrated by students in the real clinical practice, and real competence, which is shown by students in a practical assessment setting.

Unfortunately, it appears from the findings that there was no collaboration in assessment between faculty liaisons and preceptors. This could be a natural result of their lack of collaboration in other education processes. The lack of collaboration also resulted in failure to apply important quality measures, such as faculty members moderating preceptor assessments of students. Wilbur, Paiva and Black (2015) justified this lack of moderation by explaining that the QU PharmD programme encouraged the autonomy of preceptors when assessing students, while giving faculty liaisons the "supervisory alliance" role rather than the moderation one. However, this justification does not necessarily reduce the importance of assessment moderation.

Ensuring the reliability and validity of assessment tools was not a priority for the programme and did not take place at the time of the data collection. However, as noted above, Wilbur (2015) recently conducted a critical evaluation for the OCE exam in terms of reliability and correlation with other performance measures, which will be discussed in more depth in Section 7.2.3. Implementing quality measures to ensure the applicability of assessment tools, validity and rigour was stressed in Janke et al.'s (2013) recommendations for conducting assessment practices. These should be based on continuous quality improvement (CQI) cycles that aim to meet or exceed the planned learning goals. Janke et al. (2013) concluded that there are many similarities between assessment practices and CQI.

It is important to note that the PharmD programme has adopted best-practice approaches in assessment, but these need to be implemented and evaluated periodically, as reported by Wilbur (2015) after the data had been collected for this thesis research. This finding is consistent with the call by Janke et al. (2013) for innovation in assessment practices, drawing on literature, institutional needs and available resources. Janke et al. (2013) suggested piloting innovative measures in assessment and modifying them, if needed, before final implementation. Innovative practices can be developed through scholarship of assessment, evidence-based approaches, discussions, and effective leadership and should be focused on specific domains, such as professionalism, advocacy and communications.

#### **6.4.1.3. Outcomes**

##### Outcomes (O)

Implementing CoP theory has several positive outcomes that range from personal to organisational.

#### *XI. Propositions of outcomes section*

##### O1: Skills and attitudes

The first proposition for outcomes involves gaining important skills and attitudes and the continuous development of expertise, as explained in Section 5.7.3.

QU PharmD graduates are expected to demonstrate different kinds of skills, such as critical-thinking, problem-solving, and decision-making skills, and they should become life-long learners, as explained in the Competencies-D. To achieve this, the PharmD programme should provide the opportunity for all stakeholders to improve skills and develop values and attitudes, not only for students. The programme documents stressed that both students and preceptors gained knowledge and skills from practical placements through mentorship by faculty liaisons, as illustrated in the following extract:

*‘In addition to the direct training of QU students, these faculty also work with partner preceptors to advance their skills for providing structured, clinical internships.’*

Self-study-D

This extract seems to be overstated, however, because it contradicts the experiences of preceptors and liaisons, as shown in quotes from previous sections E5, C5, TS3 and A4, about the lack of partnership and collaboration between liaisons and preceptors in providing structured practical placements.

Students in the PharmD programme gained several skills, as noted by the majority of PharmD preceptors, such as the ability to approach physicians with confidence and to make and defend decisions. Most PharmD students confirmed that important skills had been gained, such as clinical judgement and intervention skills, which made them valuable members of the healthcare team. Practice preceptors and other healthcare providers appreciated these skills, as argued by one of the PharmD designers. Thus, preceptors utilised the critical evaluation skills of students by asking them to lead journal club discussions at the practice sites, which was beneficial for preceptors:

*‘So having this opportunity to mentor students in the PharmD programme is very good. I learnt from that a lot. Actually, when I graduated, I didn't know how to make a critical appraisal of articles and journals. I learned from PharmD students. During the month they spend with me, I gain every day, they teach me something, and I teach them other things.’*

S4-FG-Preceptors



Almost all of the faculty liaisons in the FG suggested that they benefited from the PharmD programme:

*‘I think that both students and faculty are gaining in terms of skills and knowledge. I feel I learnt a lot from this programme.’*

S4-FG-Faculty

While some faculty liaisons claimed that students did not acquire advanced research skills and suggested putting more focus on research during PharmD training, however, other faculty liaisons challenged this claim, as illustrated in the following example:

*‘I think these are advanced practitioner types of rotations, because we want them to be advanced practitioners, not researchers. If they want to pursue research, then residency and fellowship programmes should be completed after their PharmD, or they should go to Master’s and PhD programmes that focus mainly on the research component.’*

S4-FG-Faculty

**The above data suggest that faculty, students, and preceptors gained knowledge and skills, which was facilitated by their involvement in the PharmD programme. It is important, however, to align this finding with previous data about preceptor-liaison collaboration, to ensure the practical and realistic acquisition of skills through involvement and collaboration. It is also essential to ensure that students and other stakeholders understand that improving expertise, values, attitudes, and dispositions is a continuous process that makes them life-long learners in the CoP. Further discussion of this outcome is in Section XII.**

## O2: Improved member and organisational performance

CoP implementation should ideally result in the increased efficiency, commitment, and job satisfaction of CoP members, and lead to growth in the organisation’s performance, as explained in Section 5.7.3.

Graduating competent clinical pharmacists is beneficial for the effectiveness and efficiency of healthcare organisations, as explained in the Self-study-D document, and would have a positive effect on the healthcare sector and the wider community. The Competencies-D also showed that competent pharmacists, who understand management principles and practice within legal requirements, are able to maintain and support professional standards and possibly enhance them. These outcomes are in line with the CoP framework, which suggests that CoP implementation increases the commitment of CoP members to their organisation, by building identity and strengthening the feeling of belonging. It is important to note, however, that the sense of belonging is dependent on the time that students spend in practice placements. Currently, students leave a rotation when they start to be independent, as noted in the quote from Designer 2 in Section E7.

It is essential that preceptors gain benefits from precepting students. The pharmacy education scholar suggested considering a structured reward system for the preceptors:

*‘We need to develop a structure that rewards preceptors, because they are spending a lot of their personal time and energy to help students develop. We need to acknowledge the time and effort they are putting into that kind of work.’*

S4-Interview- Scholar

When asked in the preceptor FG about acquired benefits, some PharmD preceptors expressed their satisfaction with being part of the PharmD programme because they acquired skills they did not gain previously, such as the critical appraisal of articles, as noted in the preceptor quote in Section O1. These acquired skills reflected positively in their professional practice and organisations, which reinforces the previous finding that the PharmD programme facilitated skills acquisition for all its stakeholders, as noted in Section O1. A few preceptors expressed their dissatisfaction in being preceptors from an academic perspective:

*‘We as preceptors need to get the benefit from being adjunct faculty with QU. This is what we are lacking. From an academic point of view, we are not gaining anything.’*

And:

*'Being preceptors with QU, we are not gaining points. Of course, we have collaborative work, research project and so on, which are wonderful. But this is not part of the preceptorship. We do not gain anything from preceptorship.'*

S4-FG-Preceptors

It is interesting that these preceptors did not consider collaborative research work as a resulting benefit from their preceptorship roles. They requested professional development activities from the programme to meet their individual professional motivations and needs. It is worth noting that these contradictory perceptions from preceptors are not surprising. Preceptors acquired skills either from students or through their personal efforts to develop their roles and careers, which reflects the individual professional motivations of the preceptors. However, they expected to obtain structured training and mentoring from the programme, or academic benefits, such as adjunct faculty member titles, which did not take place.

**It seems that engagement in the PharmD programme was not associated with a structured reward system for its stakeholders, in terms of academic recognition, in spite of preceptors being financially rewarded for their role. For example, benefits such as academic titles, or mandatory academic training courses were not provided, but would have enhanced the skillset of preceptors. Hence, academic job improvement and satisfaction were not demonstrated as a benefit from the preceptorship roles. This lack of academic benefits and recognition, and job satisfaction could potentially disadvantage the preceptorship process. This finding reinforces the need for professional development activities for preceptors that reflect positively on their roles and their professional satisfaction.**

### O3: Transfer of accepted knowledge to transformed knowledge

Knowledge transformation leads to a better understanding and encourages new ways of thinking, which results in learner progression from being peripheral members to core members in CoP and identity formation, as explained in Section 5.7.3.

In practical placements, students learn by acculturation, which enables them to integrate and connect practice and formal knowledge. The PharmD year at QU facilitated student understanding of courses previously taught in the BSc programme, as suggested by the majority of PharmD students and as illustrated in the following example:

*‘When we were in the undergraduate programme, we studied all diseases, but we were overwhelmed. It was not sufficient to gain the knowledge this way, because we were just memorising and going for exams; we didn’t absorb the knowledge. Now, in the PharmD, we are dealing with real cases. We understand what pharmacotherapy means and how to manage a patient with a specific disease. So now it is making sense.’*

S4-FG-Students

These students explained that knowledge transformation was achieved by managing real patient cases and practicing the learned concepts rather than just memorising them for the sake of taking exams, which was the case during the BSc years. Most PharmD preceptors commented that students transferred what they learned in college into practice by dealing with patients and customising their communication to the level of a patient’s knowledge, which demonstrated the application of knowledge and skills within the social context:

*‘Really it is very important to teach students how to go to the level of knowledge of the patient, how to use what they have learnt and what they have gained in rotation, transfer it and apply it practically with patients, and this is what it takes to become a clinical pharmacist.’*

S4-FG-Preceptors

Student interaction with healthcare providers also facilitated their identity formation:

*‘At one site they watch their mentors, and their mentor allows them to interact independently with the team, be proactive, make recommendations, and care for patients. This might have contributed to the formation of student identity and how they see their roles.’*

S4-Interview-Designer 1

**The data suggests that student interaction with real patients in the practical placements and with other members in the healthcare team led to knowledge transfer and application within the social context, which enhanced professional identity formation. This outcome is directly related to knowledge recontextualisation, discussed in Section C2. Respondents did not emphasise the concept of becoming core members in the community, which could be due to a lack of understanding of CoP theory and its main concepts or because they were not made to feel part of this community.**

#### O4: Integration

Collaboration between faculty liaisons and practitioners results in integration between research and practice and between theory and practice, as explained in Section 5.7.3.

The cross-appointment arrangement for some faculty liaisons, explained in Section 1.4.5, is important for giving them access to practice sites or for facilitating access for other clinical faculty members, as noted by one of the PharmD programme designers. This access is key for leading and conducting clinical research projects in the practice sites in collaboration with practice members, preceptors, as described in the following extract:

*‘Research projects are led by clinical pharmacy faculty members in conjunction with adjunct faculty.’*

Design-D

One of the PharmD programme designers reported that this collaboration has led to the production of some co-authored publications by preceptors and faculty liaisons. Some preceptors perceived the scholarly collaborative work between themselves and faculty as a benefit of their relationship with QU, as explained in Section O2, however, they, unexpectedly, felt that this benefit was not related to their role as preceptors.

Another outcome of this collaboration is the quality improvement in clinical research, as anticipated by the pharmacy education scholar, because it integrates the research skills of faculty and the professional expertise of preceptors:

*‘The CoP has been really helpful, for example, around pharmacy practice research, and actually helped the quality improvement in practice projects.’*

S4-Interview-Scholar

**The significance of collaboration between faculty and preceptors in increasing the productivity and the quality of practice research was stressed by the PharmD designers, the pharmacy education scholar, and in key documents. However, the same opinion was not expressed by faculty or preceptors, who are the subjects of this collaboration, possibly because they did not collaborate in other aspects. The evidence of collaboration in research but not in other aspects, such as teaching, planning, and assessment, discussed in previous findings, suggests that the real collaboration picture in the PharmD programme is complex. The practical implementation of collaboration to integrate theory and practice and enhance research appears to be not valued and unachieved in the QU PharmD programme as an outcome, as will be discussed in Section XII.**

## *XII. Discussion of outcomes findings*

Since CoP is not implemented in its entirety, it is expected that its outcomes will not be comprehensively achieved. Rather, implicitly implemented elements will lead to the partial achievement of outcomes, as further discussed in Section 7.2.3.

Some aspects of the CoP framework outcomes have been achieved. For example, it appears from the findings that involvement in the PharmD programme has facilitated student acquisition of knowledge, skills, values and attitudes, which should be sustained to prepare them to become life-long learners. This finding is consistent with Goldie et al.’s (2015) description of good clinical students. They argued that good clinical students understand that learning is a life-long journey and demonstrate particular qualities, such as enthusiasm, motivation, proactivity, confidence, information management, respect and good communication skills. Good clinical students are also responsible for their learning through regular presence in patient care areas, where they show knowledge, competence and honesty when interacting with patients.

Some preceptors suggested that the PharmD programme did not facilitate skills acquisition or improve their mentoring and professional practice, so involvement in the PharmD programme did not lead to their increased efficiency and job satisfaction. This could be attributed to the lack of CoP understanding and application. The professional healthcare education literature suggests that involvement in CoP through preceptorship is beneficial for preceptors. For example, Roberts (2015) explained that therapist membership in CoP enhances the acquisition of “tacit” or “know how” knowledge through discussions with colleagues, association with expert members and by exploring the evidence within the real practice setting. Preceptor contributions to CoP through preceptorship and student mentorship increases their ownership, passion, retention, and job satisfaction. Burton, Boschmans and Hoelson (2013) suggested that job satisfaction is associated with triggers or motivators for academics. For example, an important motivator for an academic is the professional recognition of a colleague or a manager, whether this professional recognition is intrinsic, in a personal manner, or extrinsic in a public manner.

These findings reinforce previous findings that the PharmD programme did not invest in the professional development of preceptors. They also indicate a need for the PharmD programme’s team to recognise the key role of preceptors and to invest in their training, which improve their satisfaction with the preceptorship role. This will ultimately reflect positively in their roles in their own organisations. McAllister, Opreescu, and Jones (2014) suggested that when nurse educators who precept students in a practice placement receive professional development opportunities, they become more satisfied with their roles as preceptors, which positively affects student experiences. Frankel, Louizos and Austin (2014) confirmed the efficacy of preceptors professional development and training programmes, to the benefit of both preceptors and students. This efficacy for preceptors was demonstrated in enhanced motivation for their preceptorship, improved confidence, and better retention rates. Professional development and training programmes for preceptors improved their performance as educators, which ultimately enhanced learning experiences.

The findings suggest that student interaction with real patients in the practical placements and with other healthcare professionals led to knowledge transfer and skills application within the social context, which infer transferring accepted

knowledge to applied knowledge. This application of knowledge and skills appeared to enhance the formation of professional identity in students. However, it is important to note that measuring knowledge development through CoP is a complex and challenging process for several reasons, such as: some knowledge is intangible and difficult to measure, knowledge dissemination can also be variable among individuals and finally, knowledge development should be measured and contrasted at several points of time, which is difficult (Bertone et al., 2013).

The transfer of knowledge and application of skills should be associated with a more central role in the community of practice, which can be facilitated by a better understanding of CoP theory. This finding is consistent with Bates et al. (2013), who explained that students develop their professional identity when engaged in direct patient care in practical placement. Identity development is associated with competence development, which is demonstrated by their movement from a peripheral position as a student in the CoP, to a more central position as a colleague. Identity development is not only important for students, but also for pharmacy educators, as noted by Burton, Boschmans and Hoelson (2013). They noted that the identity development of novice educators can be facilitated through communication, personal relationships and negotiation with other senior pharmacy educators who have successfully negotiated their academic identity.

The findings suggest that the practical integration of preceptors and faculty liaisons was not fully achieved in the PharmD programme, in spite of the recognition of its significance in integrating theory and practice and in enhancing research and scholarship. This finding is not surprising and is associated with the lack of collaboration between faculty and preceptors in other aspects of the education process. In line with this finding, Gonczi (2013) argued that before sending students to practical placements, it is important to ensure that the learning provided through these placements is of high quality. High quality experiential learning is demonstrated by collaboration between academics at practice sites and at university in all aspects of clinical learning, and production of knowledge that improves patient care practices by integrating theoretical knowledge with clinical experiences.



Sherbino, Frank and Snell (2014) explained that integrating theory and practice could be achieved by training clinician educators (CEs) about their important role, through a combination of formalised, and rigorous approaches. Weston and Hudson (2014) confirmed previous definitions of scholarship as the discovery, research, integration, application, and teaching of knowledge, and suggested that practical placements are not only beneficial to students, but also for preceptors. Preceptorship encourages preceptors to integrate recently acquired knowledge into their daily clinical practice, teaching and community-based activities. This integration is a key feature of scholarship and motivates preceptors to review their previous knowledge, become more reflective in their practice, and strengthen their ties with academic institutions. With regard to the effect of faculty and preceptors' collaboration in research and scholarship activity, Roberts (2015) stressed the importance of CoP in integrating research outcomes with real practice experiences. He added that scholarship facilitates creating shared knowledge between scholars and practitioners, which is ultimately used for improving real professional practice.

#### **6.4.2. Results of inductive analysis**

This section presents the findings of the data that was analysed inductively. It is worth noting that after the initial writing and revision of thesis chapters, it was decided to avoid repetition with ideas emerging from this case study that were discussed in Section 6.4.1. Hence, this section only presents inductively developed ideas emerging from data that have not been elsewhere presented and discussed thoroughly.

##### A. Factors that affected the design and implementation of the PharmD programme

The first theme that emerged from the data involves the factors that affected the design and implementation of the PharmD programme. Some of these factors were discussed in Stage Two of this research in Section 4.7, and explained that the design of the QU PharmD programme was a hybrid one, based on other universities worldwide, while taking into consideration the particular needs of Qatar, which has an undeveloped pharmacy profession. This finding is reinforced in this stage by both PharmD programme designers. The data from this stage also suggests that the design

and implementation of the programme was completed at a relatively rapid pace because of the obvious need for these pharmacy programmes in the country, and this rapid pace was potentially associated with not being fully prepared:

*‘This was the right thing to do at that time, and I don’t think that we would have been entirely ready, but timing is everything. Once the programme was in place, it gave me the leverage to request a pharmacy building.’*

S4-Interview-Designer 1

The data suggests that the QU PharmD programme did not implement a specific learning theory in its design, and that the designers were, instead, keen to taking rapid steps in designing and implementing the programme. However, the available literature about CoP development indicates that adequate time should be given for the design, implementation, growth and stability of successful CoPs,. It is important, thus, to evaluate CoP development, success and sustainability over an extended period of time, instead of expecting success and outcomes achievement at an early stage after development (Bertone et al., 2013).

### B. Characteristics of the QU PharmD programme

This theme centres on the major characteristics of the PharmD programme that distinguish it from other programmes. Comments made by most preceptors indicate a perception amongst them that QU PharmD is a strong programme with high standards and a good reputation. The majority of PharmD preceptors commented that QU PharmD programme is comparable or even superior to PharmD programmes in the United States:

*‘I can say that the level of QU students exceeds the level that I had seen in the USA. The structure of the programme here is better than the structure in the USA’s programme.’*

S4-FG-Preceptors

Many international PharmD programmes are still struggling, after many years of establishment, to solve the same problems that the QU PharmD programme has recognised and is now trying to solve, as explained by most preceptors during their

FG. The strength of the programme and its high standards led to the increased professional acceptance of students by healthcare providers, as indicated in Section TS5.

One of the PharmD programme designers argued that part of the programme's strength is the pharmacy students, who are gifted students, based on the designer's previous experience with other students worldwide, and hence QU students exceeded the expectations of their preceptors in their performance levels. However, few preceptors expressed their dissatisfaction with student levels of knowledge, and described it as "superficial". These superficial knowledge levels made the preceptor job more difficult, because they had to orient students to basic concepts:

*'We found that students' knowledge is very shallow and basic when they join us and very superficial. It is not enough for them to understand very basic concepts. So we start teaching them basic concepts through rotations.'*

S4-FG-Preceptors

These conflicting findings suggest the necessity of retaining the programme's strengths and taking it to the next level by demonstrating the high performance levels of students in progressive and sequential practical placements. This finding is consistent with Wilbur, Paiva and Black (2015), who argued that in Qatar, there is an expectation of increased standardisation of health sciences education to achieve global leadership. This increased expectation is associated with an increase in devoted resources for healthcare and an increased healthcare demand of the population. Hence, QU PharmD programme places an emphasis on the experiential components of students learning to prepare them for their important and ever expanding future roles (Wilbur, 2015).

Frankel, Louizos and Austin (2014) argued that major changes are needed to prepare students for advanced clinical roles. The pharmacy education literature described challenges associated with the evolved role of pharmacists, and changes in accreditation standards. For example, in Canada the first professional degree in pharmacy will be changed to the entry-to-practice PharmD programme in all pharmacy programmes accredited by CCAPP, as noted in Section 2.9.1. These changes in CCAPP standards have also influenced QU PharmD programme by

considering the conversion of the QU BSc degree into a QU entry-to-practice PharmD degree in the coming few years, as discussed in Section 1.4.4.

### C. Suggested refinements to the PharmD programme

The third theme centres on potential refinements in the PharmD programme, as suggested by some respondents.

Several respondents suggested that the evaluation methods and tools should reflect the placement focus and specialty. One of the PharmD programme designers considered these evaluation tools as learning opportunities for PharmD preceptors, because they reflect the programme expectations. Academic placements should be evaluated differently from those for clinical placements, as suggested by a few PharmD students, based on their experiences on international placements. Gonczi (2013) explained that assessment tools should be variable. He noted that they should contain performance assessment tools that have marking scales, to make a judgement about student performance and competence in real practice, as well as reflective assessment tools that use a log or portfolio, to evaluate student development in performance over time. Gonczi (2013) also suggested using simulated settings for assessment before exposing students to real practice.

It is essential when designing and refining assessment methods to involve all people who deal with students in their evaluation, as suggested by the pharmacy education scholar. This ‘360 degree feedback’ includes feedback from patients, peers, other healthcare professionals, supervisors, and pharmacy technicians. Some PharmD students noted that in the Qatari culture, feedback from patient families is important, as an important part of patient care.

Most PharmD preceptors suggested in their FG that the undergraduate and graduate syllabi should be refined and updated to reflect new trends and guidelines in pharmacy practice. Preceptors also suggested getting involved in classroom teaching, as indicated in Section C5:

*‘The undergraduate syllabus should involve collaborative work between faculty and preceptors. Our role should not only be for the rotation, and nothing else. Whenever we face a problem with a student at the practice site, we communicate it to college, so that they consider it in the syllabus refinement. Being involved in teaching practice related issues is also very helpful for students.’*

S4-FG-Preceptors

This finding links back to the importance of collaboration between faculty and preceptors in all education processes, particularly teaching. In line with this finding, Sherbino, Frank and Snell (2014) emphasised the significance of the CE role. They explained that CEs should have an active clinical practice role that helps them to apply theoretical knowledge in real practice, to answer student queries about clinical practice, and to bring evidence into their clinical and educational practices. This dual role helps them to apply their knowledge of education theories and teaching strategies in their preceptorship role, and to understand challenges in medical education. They also stressed that CEs should be involved in education scholarship, so that they gain an academic identity that differentiates them from other clinicians who do not teach. They noted that education scholarship helps CEs in their professional educational role as mentors, including curriculum development, teaching and assessment.

## **6.5. Summary and integration of deductively and inductively produced findings**

The findings of the deductive analysis of this research suggest that the evidence of the CoP framework implementation in the QU PharmD programme falls into three categories. The implementation of some CoP elements was either implicitly fully evident, or implicitly partially evident, or not evident at all. The detailed discussion of this categorisation is presented in Section 7.2.1.

It seems that few components of the enablers were partially evident, such as benchmarking, reflection, integration with the CCAPP accreditation standards, and the provision of healthy environment. However, other components were less evident,

such as the formation of a co-development team, faculty member involvement, reciprocal learning, and the presence of a policy about student responsibilities and authorities.

Some major challenges in CoP were evident, such as the lack of understanding and communication of the theory, the limited number of preceptors, and the practical placement integration. It is worth noting that the lack of some key enablers and the presence of some challenges affected the implementation of CoP theory in the programme and the understanding amongst different stakeholders of its value.

Looking at the education process pillars, it appears that key elements of the curriculum were implemented, such as knowledge recontextualisation, social construction of learned knowledge and skills by students, vertical integration and application of the curriculum in practical placements. Other elements were not adequately and consistently evident, such as compatibility with CCAPP accreditation standards and recently with the professional licensing body, informal learning, and planning practical placement details while considering student needs. However, collaboration between faculty liaisons and practitioners, did not take place.

The implementation of a key element in teaching strategies was evident, the social and professional acceptance, with few inconsistent practices. However, other very important elements have not been fully and consistently evident, such as planned progressive mentoring strategies, healthy learning environment, peer support, and shadowing between practitioners and academics.

The PharmD programme has planned effective assessment activities that follow best practices. However, the programme should pay attention to the unimplemented or partially implemented assessment activities. For example, the programme should ensure the authenticity, reliability and validity of assessment tools. Also, the programme should orient preceptors to assessment activities, encourage the collaboration between faculty liaisons and preceptors in respect of assessment, and formulate a quality mechanism to moderate preceptor assessments. Finally, the programme should ensure applying a balanced and comprehensive assessment system.

Since not all CoP elements were implemented, it was expected that not all CoP outcomes have been fully achieved. For example, data suggests that stakeholders have not gained increased efficiency and job satisfaction. Also, the integration of theory, practice, and research, and the transfer of accepted knowledge to applied knowledge have not taken place comprehensively. However, some outcomes have been better achieved, such as student acquisition of different skills and attitudes.

Finally, the few additional findings associated with the inductive analysis suggest that the programme design and implementation was completed at a relatively rapid pace, which was associated with not being fully prepared in some aspects.

The findings suggest that the programme is comparable in its strength to other well-developed international PharmD programmes. However, as indicated in the literature about pharmacy education, it is important that the programme retains its strengths by demonstrating the high performance levels of students through sequentially progressive placements. The programme needs also to deal with the challenges that face the PharmD programme elsewhere.

It is also important to pay attention to suggestions for refinement of the programme, such as aligning the syllabus with updated guidelines in pharmacy practice, customising assessment tools for practical placement learning outcomes, and involving preceptors in the classroom teaching of practice-based topics.

Most findings from the inductive analysis link back to major findings associated with the deductive analysis based on CoP framework propositions. Examples of aligned findings are: the importance of the preceptor role, the emphasis on best practices in assessment approaches and tools, the impact of properly planning placement sequences on student progress, and the importance of giving adequate time to the design, implementation, growth and stability of the programme, through a well-established co-development approach. The alignment of inductive and deductive analysis in the focus and results meant that the inductive analysis contributed to answering the research question. This was the result of several data analysis and interpretation cycles, and illustrates the integration of inductive and deductive findings in building explanations for the case study, as discussed in Section 3.14.3.

The final explanation of findings which resulted from analysing, interpreting and integrating the results from all stages, including inductive and deductive findings, is fundamental in framing the case study-developed theory, and research recommendations presented in Sections 7.3 and 7.7.

## **6.6. Summary of chapter**

The findings of Stage Four were presented in this chapter. This stage aimed to analyse the existing PharmD programme at QU through the lens of the CoP framework developed in this research. After discussing the findings of each section of the CoP framework, the findings of the inductive and deductive analysis were synthesised and integrated. In the next chapter, the findings of Stages One, Two, Three, and Four will be discussed to answer the research questions and offer recommendations.



## **7. Chapter Seven: Discussion and conclusion.**

### **7.1. Introduction**

This chapter provides a discussion of the findings from all stages of the research. Each research question is addressed and then all key conclusions are integrated to answer the overarching research question and frame the case study-developed theory. The strengths, contributions and limitations of the research are then identified. The chapter ends by providing recommendations for key sectors in the education process and suggesting possibilities for future research.

### **7.2. Addressing the research questions**

#### **7.2.1. The existence and nature of the disconnect between learning theories and educational practices in the QU PharmD programme**

This section addresses the first research question concerning the existence and the nature of the disconnect between learning theories and educational practices in the QU PharmD programme. To answer this question, a literature review of learning theories and educational practices in professional healthcare education, particularly pharmacy, was initially completed to understand the broader situation. This literature review demonstrated that learning theories are usually not fully implemented in educational practice in professional healthcare education, as suggested in Sections 2.9.3, 2.9.4, and this has resulted in a disconnect between theory, practice and research (Allan and Smith, 2010). This makes the investigation of the disconnect between learning theories and practice a key element of this research. It is important to note that the educational literature discusses the disconnect between learning theories, or pedagogies and educational practices, generally (Allan and Smith, 2010; Benner, Tanner, and Chesla, 2009; Duncan-Hewitt and Austin, 2005; Moss, Grealish, and Lake, 2010; Waterfield, 2011), without considering whether there are particular levels in the disconnect.

After analysing the data and findings, it is possible to theorise about the nature of the disconnect between the learning theories and educational practices, and to discern the different ‘levels’ of the disconnect. Four levels of disconnect are proposed, as illustrated in Figure 7.1. Within each level there is a range of sub levels, demonstrating a continuum between each of the disconnect levels, such that distinct categorisation of levels is not absolute.

At the first level, “explicit disconnect”, learning theories are neither recognised nor implemented in the educational practices in the programme, which means that the programme educational practices do not represent any learning theory, either explicitly or implicitly. At the second level, “implicit disconnect”, the learning theories are not recognised explicitly, but seem to be partially implemented in the educational practices of the programme. This means that some practices emerging from particular learning theories are implemented by default and implicitly, without recognition of their relationship to a particular learning theory and without full or intentional implementation of the theory’s details or underlying requirements. The third level is “purposeful disconnect”, wherein the learning theories are recognised and understood, but there is a lack of implementation. Usually, this lack of implementation is due to a lack of resources, such as preceptors or practice sites, or due to a lack of belief by the designers in their value and significance as a foundation for the education programme. Finally, in the last level, “no disconnect”, no disconnect is found, meaning that the learning theories are recognised, understood and implemented comprehensively and explicitly in the educational programme’s practices.

Figure 7.1 Levels of the disconnect between learning theories and educational practices

		Learning Theories	
		Recognised	Not Recognised
Educational Practices	Implemented	No Disconnect	Implicit Disconnect
	Not Implemented	Purposeful Disconnect	Explicit Disconnect

The significance of aligning educational practices with learning theories has been stressed in several studies, as discussed in Sections 2.9.3 and 2.9.4. For example, Kelly et al. (2016) suggested underpinning simulation practices with an appropriate pedagogical foundation or theoretical framework. This pedagogical foundation ensures that simulation practices will produce the expected improvement in student learning experiences, and ultimately, in patients' care. Botma et al. (2015) developed a conceptual framework on the basis of constructivist learning theory. This framework aimed to guide educators in how to design educational modules that facilitate learning transfer and the application of learned theory in real practice. They argued that the steps of the framework could be used as standardised templates for designing education programmes. They concluded that the conceptual framework developed should guide the efforts of professional education programmes in curriculum design and improvement. However, a challenge of such a standardised template for designing academic programmes is its prescriptiveness without flexibility based on context.

Furthermore, as noted in Sections 2.6, 2.9.4, and 5.5, Fung-Kee-Fung, Boushey and Morash (2013) attempted to close the gap between CoP theory and its application in healthcare practice settings, by creating a CoP evaluation framework to implement CoP in cancer surgery practice. Mazel and Ewen (2015) used this CoP-based model in medical education to examine the effectiveness of the collaboration in the LIME Network. Holden et al. (2015) also proposed using this CoP-based framework to facilitate curriculum enhancement in teaching and learning about men's healthcare to address the barriers to, and enablers of CoP implementation, or to evaluate and implement CoP approach in any other medical education discipline, that focuses on student learning (Holden et al., 2015).

The findings of this research support the idea that there is a theory-to-practice disconnect and suggest that learning theories were not considered in the design and implementation of the QU PharmD programme for several suggested reasons, which were discussed in Sections 4.7 and 4.8. The design of the QU PharmD programme aimed to meet specific learning outcomes, based on best practices evident in other PharmD programmes worldwide, Qatar's educational needs, and the CCAPP accreditation agency standards. The PharmD programme is thus not explicitly guided by recognised learning theories. The "no disconnect" level is therefore not applicable to the QU PharmD programme, because learning theories were neither recognised nor explicitly applied.

The data did not provide any evidence that the QU designers, faculty and preceptors were aware or interested in utilising learning theories. This suggests that, unfortunately, there was a lack in recognising the key role of learning theory in programme design and implementation, which adds to the disconnect between learning theories and practice. A corollary of this, as argued by Gonczi (2013), is that the preceptors struggle to fully support their students because they are not developed as educators, yet are responsible for student learning at the practice sites. He noted that their responsibility for the student learning could become problematic if it is not associated with collaboration between the universities and the practice sites. This general lack of understanding of learning theories or their significance suggests that the disconnect is not at the third level, the "purposeful disconnect", wherein learning theories are understood and recognised, but not implemented.

The findings of this research suggest that some practices emerging from particular learning theories are implemented by default, without recognition of their relationship to a particular learning theory or a specific educational approach and without the intentional application of the theory. This means that the disconnect level is not at the first level, “explicit disconnect”, in which CoP theory or other learning theories are neither recognised nor implemented in the educational practices, either explicitly or implicitly.

The QU PharmD programme has incorporated some components of the CoP framework by default. For example, informal learning, a key component of the curriculum section, was implicitly implemented in the programme, without any explicit reference to it in the documents or by the stakeholders, as discussed Section 6.4.1.2, C1. Some of the preceptors implicitly and inconsistently applied mentoring strategies, an important component of teaching strategies, to support learning in practice, without being formally oriented or trained about them, as described in Section 6.4.1.2, TS2. Similarly, the programme implicitly planned effective assessment activities, noted in Section 6.4.1.2, A5, with consideration of the best practices evident in other PharmD programmes (Section 6.4.1.2, A7), including authentic assessments (Section 6.4.1.2, A3), without intending to apply CoP framework. It is thus proposed that the PharmD programme is at the second level of disconnect, “implicit disconnect”, in which the CoP or other learning theories are not recognised explicitly, but are partly and implicitly implemented in the educational practices of the PharmD programme.

Some important educational practices, according to CoP, were not implemented explicitly or implicitly, as will be discussed in Section 7.2.3. Nevertheless, it can be argued that learning theories have shaped several, but not all, of the educational practices incorporated in the QU PharmD programme. For example, experiential learning, shadowing and mentoring practices were implemented, although there was no plan to apply a particular learning theory in the design of the programme, and these theories were not fully and consciously understood. Rather, these educational practices may have been evident in other PharmD programmes or professional programmes, and thus, were seen as good practices to adopt and adapt.

### **7.2.2. The appropriateness of CoP theory for the design of the PharmD at QU**

To answer the second research question, the reasons that make the CoP theory suitable for the QU PharmD programme will be discussed, highlighting CoP's relevance for students, faculty and preceptors. This discussion is extracted from the detailed discussion in Section 2.7, while relating it to the findings of this research, which highlights the value of the literature review in answering the research question.

#### ***A. Students***

Most students reported that they had developed the ability to apply and recontextualise knowledge in a real setting, however, some students suggested a need for better horizontal integration between what they learned in the classroom in the BSc and PharmD programmes and their practical placement knowledge. There was also no evidence of an appropriately integrated assessment method for assessing recontextualisation. These weak integrations affected student confidence in their readiness for independent practice.

In CoP-based experiential learning in a PharmD programme, students recontextualise knowledge, which enhances confidence in their readiness to practice (O'Neil and Berdine, 2007). They noted that students reported their readiness and confidence to provide wellness services after completing the wellness advanced pharmacy practice experiences. However, they had less confidence and readiness to practice stroke screening, due to the limited experience they had gained in stroke screening in a health professional education context. Knowledge application and recontextualisation takes place when theoretical knowledge is applied in situated practical placements (Jungnickel et al., 2009; Owen et al., 2011), by dynamically constructing and restructuring knowledge into personal meaning in the practice environment and by curriculum integration (Pearson and Hubball, 2012). The implementation of CoP theory as a basis for experiential learning in the QU PharmD programme would thus ensure that all students recontextualise knowledge, which would resolve the weak integration between the knowledge and skills gained in classroom and the knowledge and skills gained in placements, as argued by some students. The findings of this

research support the literature by highlighting that generally QU PharmD students were socially and professionally accepted in practical placements, and in their professional communication with the members of the healthcare team. This enhanced their professional competence, belonging and contribution to the profession, and professional identities.

A CoP-based PharmD programme could further enhance the consistency of learning environment support across the practice sites and the consideration of student needs and goals in planning for practical placements, because those two elements are key in the professional identity and life-long learning of students (Hägg-Martinell et al., 2014). Hence, when students learn in a CoP-based experiential rotation, they have the opportunity to participate and become part of the CoP, initially as peripheral participants, and moving to become more core participants. Through this authentic participation, students interact with members of the healthcare team (Thrysoe et al., 2010) and share their junior perspectives on real practice (Jaye, Egan, and Smith-Han, 2010). Furthermore, Frankel, Louizos and Austin (2014) highlighted the value of engagement in IPE for medicine and pharmacy students in enhancing their professional relationships and clarifying roles and responsibilities. This enables students to be effective contributors to the practice sites based on their levels of expertise (Duncan-Hewitt and Austin, 2005).

### ***B. Faculty liaisons***

With respect to the faculty in the QU PharmD programme, the clinical cross-appointment arrangement with practice sites for some PharmD faculty improved their connection with real clinical practices and updated their clinical, practical knowledge and skills. This resulted in the improvement of their job satisfaction. However, QU's PharmD faculty were not particularly professionally developed in areas related to their roles as educators, which is a key professional development area.

Involvement in a CoP-based PharmD programme encourages faculty to exchange knowledge with peers through formal or informal group learning activities. These knowledge exchange activities are designed to facilitate the development of faculty

skills in areas related to their core specialties and their teaching and research portfolios (Steinert, 2011). Laliberté et al. (2015) suggested the creation of a CoP dedicated to ethics education, for example, within the physiotherapy and occupational therapy ethics educators. Through this CoP, faculty would share instructional methods, resources and knowledge to enhance rehabilitation ethics training, and to provide professional development opportunities for other educators.

The findings of this research also demonstrate that some faculty, through their involvement in the PharmD programme and their clinical cross-appointment roles, participated with preceptors in practice research. This participation enhanced the job satisfaction of the involved faculty and preceptors, which is a promising step in the right direction.

A CoP-based PharmD programme could further strengthen the integration of theory and practice, and of the faculty in academia and the preceptors at the practice sites in all aspects of the PharmD programme. A good working relationship between the faculty and the preceptors, established through the clinical practice of faculty at the practice sites, leads to their collaboration in scholarship activities. Such collaboration ensures the incorporation of the practice expertise of practitioners and the research expertise of academics. This leads to stronger evidence in practice research, which improves the quality of practical and scholarly knowledge and meets the healthcare needs of the community (Jiwa et al., 2011; McAllister, Oprescu, and Jones, 2014). Involving students in research activities helps to build a research culture among students, preceptors and faculty (Pugsley, 2008).

As noted in Section 7.2.2, A, the horizontal integration in the QU PharmD programme between classroom courses and practical placement was not adequate, which affected student confidence in their ability to practice.

In a CoP-based PharmD programme, this integration could be achieved through effective collaboration between fundamental sciences faculty members and clinical faculty members when designing the curriculum and courses (Austin and Duncan-Hewitt, 2005). In line with that, Husband, Todd and Fulton (2014) explained that the first and lowest step on Harden's (2000) integration ladder is isolation, which is



evident in the traditional medical curriculum. It means the full separation of content, delivery and assessment of courses in different disciplines by faculty members. He added that in the higher steps on the ladder, such as the awareness or sharing or correlation steps, the faculty of different disciplines ensure the coordination of their course content and expected outcomes. Husband, Todd and Fulton (2014) identified all other steps in the ladder, and emphasised that transdisciplinary integration is the highest step, where students integrate content from different discipline courses in their minds to apply them in real practice. This level cannot be achieved without the integration of faculty from different disciplines in preparing the content, delivering and assessing it.

### ***C. Preceptors***

The preceptors in the QU PharmD programme were generally not satisfied with the benefits they gained from their preceptorship, because they had anticipated that they would attend professional development activities tailored to orient and develop them in their roles as educators.

The application of CoP theory in the QU PharmD programme could positively meet preceptor needs through the provision of tailored professional development activities. The implementation of CoP is expected to facilitate the development of the preceptors' knowledge and skills, which are required for their clinical fields and their professional competence (Roberts, 2015). This development increases their work satisfaction and their independence in developing students at the practice sites, which ultimately improves their ownership and participation in the CoP (Bentley, Browman, and Poole, 2010).

It is important to note that the preceptors' recognition of their own identity suffered in the QU PharmD programme because preceptors were trained as practitioners, are practicing as clinical practitioners, and are expected to practice as educators through the PharmD preceptorship. The literature about CoP theory has discussed the "nexus of multi-membership" concept. This concept highlights the effect of membership of more than one CoP on the formation and negotiation of professional identity for

preceptors in pharmacy practice and pharmacy education CoPs (Burton, Boschmans, and Hoelson, 2013). Hence, preceptor involvement in a CoP-based PharmD programme with tailored professional development opportunities could enhance the recognition and the negotiation of their professional identity across different roles.

Unfortunately, a major finding of this research highlights the low level of preceptor involvement in key steps of the programme's design and implementation, which was associated with a lack of collaboration and communication between preceptors and faculty at the programmes' inception.

When practitioners participate in a CoP-based PharmD programme, preceptors collaborate with academics from the university to reciprocally exchange knowledge with them, and hence they incorporate research evidence and updated guidelines into their daily practice. This has the benefits of reducing the gap between universities and professions, improving the research, and preparing the practitioners for reflective practice, so that they can develop professional practice standards (Waterfield, 2011). When academics and practitioners participate in each other's CoPs, their understanding of the differences in their expertise and skill sets is also enhanced (Bartunek et al. 2003; Ousey and Gallagher, 2010).

In summary, the major elements of CoP theory are thought to fit well with the QU PharmD programme, because they could address the main findings and pedagogical issues highlighted in this research. A CoP framework has therefore been created in this research as a theoretical instrument with which to engineer new PharmD programmes or to analyse existing ones.

### **7.2.3. Evident elements of CoP learning theory in the design and implementation of the QU PharmD programme**

This section addresses the third and fourth research questions by explaining the rationale of the developed CoP theoretical framework and discussing the evidence of its elements in the QU PharmD programme.

The development of the CoP framework with its six sections, and its comprehensive explanation and discussion in Chapter Five answer the third research question. The developed CoP framework was used to analyse the QU PharmD programme, highlight the evident and absent elements of CoP framework in the programme, and explain the effect of the evident and absent elements on the stakeholder and student experiences, which answer the fourth research question.

The findings of this research suggest that the evidence of the CoP framework in the QU PharmD programme falls into three categories, which are represented in Table 7.1.

Table 7.1 CoP framework elements evident in the QU PharmD programme

Elements of CoP that were implicitly and fully evident	Code	Elements of the CoP that were implicitly and partially evident	Code	Elements of the CoP that were not evident at all	Code
Different interpretations, and lack of communication about measures and outcomes of theory	CH1	Co-development team	E1	Integration of academics and practitioners	C5
Time constraints	CH2	Co-development approach	E2	Validity and reliability of assessment tools	A2
Students' lack of confidence	CH5	Internal drivers, including faculty member satisfaction and involvement	E3	Collaboration between academics and practitioners in assessment	A4
Balance in the number of members in the CoP	CH6	External drivers, including integration with governmental drivers and accreditation standards	E4	A balanced and comprehensive assessment system	A6
Recontextualise Knowledge and transfer of tacit knowledge to explicit knowledge	C2	Trust, respect, and communication that is active, passive, and using IT for reciprocal knowledge exchange	E5	Quality assurance for assessment	A8

Social and professional acceptance	TS5	Time requirement and regulatory policies for practical placement	E7	Improved member and organisational performance	O2
Well-planned assessment activities	A5	Formal and informal learning	C1		
Best-practice assessment systems	A7	Practice placement details	C3		
Skills and attitudes	O1	Dual accreditation	C4		
		Integrated curriculum	C6		
		Learning environment	TS1		
		Mentoring strategies	TS2		
		Shadowing	TS3		
		Peer support	TS4		
		Educator orientation to the assessment system	A1		
		Authenticity of assessment tools	A3		
		Transfer of accepted knowledge to transformed knowledge	O3		
		Integration	O4		

### ***A. Categorising individual elements***

Some elements of the CoP were implicitly and fully implemented, others were implicitly and partially implemented, and other elements were not implemented at all. As noted in Chapter Six, the judgement regarding those elements, particularly the ones that fall under the implicitly and partially evident elements category, represented a continuum and a grey area, which required the researcher's interpretation of different respondent perspectives on the evidence of implementation. Elements in the grey area either contained sub-elements, where some are evident and others are not, or there were conflicting views about the evidence of implementing these elements in the data.

Several factors affected the development of analysis and interpretation cycles. Some of these factors are related to the researcher, such as her previous experience in the programme, her understanding of the CoP framework, and her adopted interpretative framework, social constructivism. Other factors are related to the research development and processes, such as the feedback received from one of the PharmD programme designers during the member checking quality step for the preliminary analysis of the data in Stage Four. The designer suggested adding an analysis category that identifies the CoP framework elements that were partially implemented, instead of having categories for only fully implemented or non-implemented elements. With these various factors, the researcher made the decision to categorise elements in this grey area as implicitly and partially evident elements, as will be discussed in this chapter.

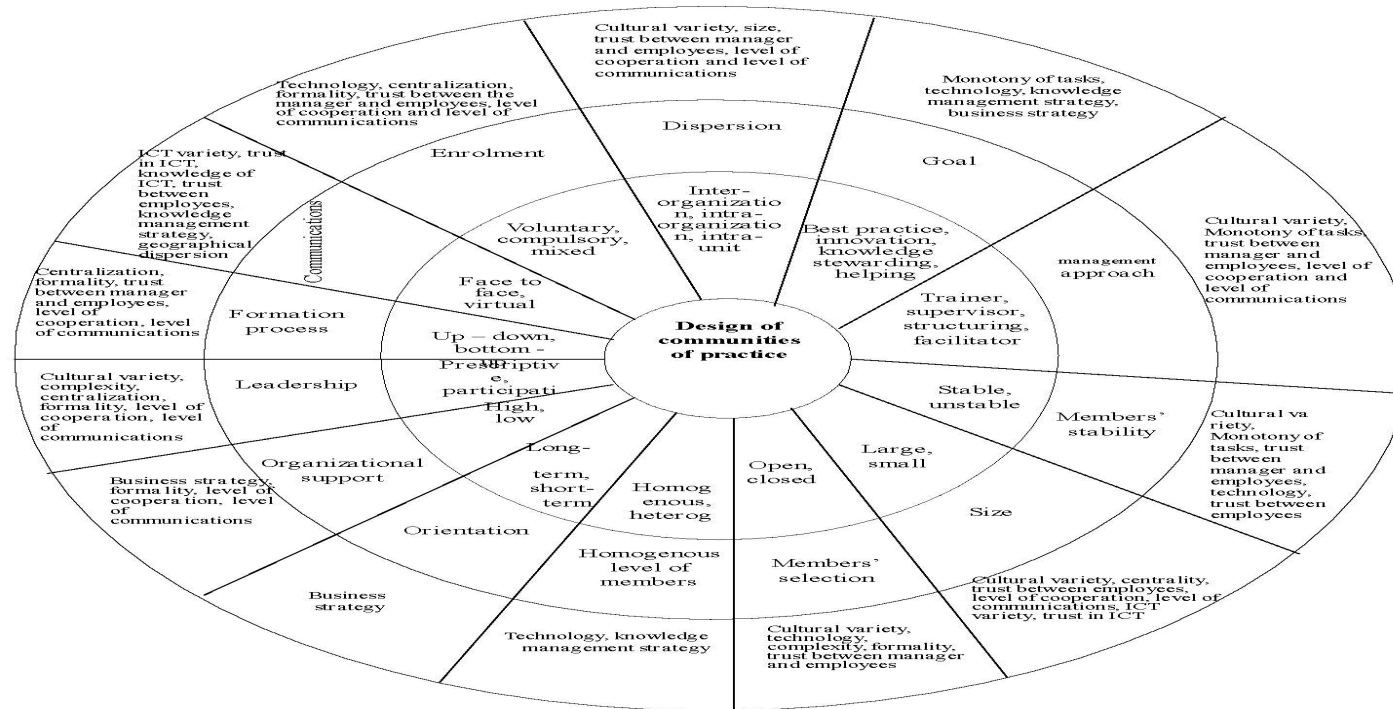
### ***B. Implicit partial evidence of enablers***

None of the enablers were implicitly fully implemented. Instead, they all fall into the ‘implicitly partially evident’ category, which means that the ideal conditions for the implementation of the CoP did not comprehensively exist in the QU PharmD programme.

As noted in Section 5.7.1, a two-way relationship between the enablers and the education process pillars was assumed in this research during the creation of the CoP framework. This suggests that the presence or absence of the enablers will affect the education process pillars in a dynamic manner. Since the existence of the enablers was not comprehensively evidenced, several elements of the education process pillars will either be partially evident, or even absent, in the programme, because of the said dynamic relationship between different components in the CoP framework. The presence of a dynamic, influential relationship between the CoP features and the organisational features was supported by Jassbi et al. (2015), who created a holistic CoP model for firms and organisational contexts, and identified two variables that affect each other bi-directionally. These two variables are the organisational variables and the CoP components, as shown in Figure 7.2. Examples of the CoP components are size (large or small), process of member selection (open or closed), members’ enrolment (voluntary or compulsory or mixed), members’ homogeneity

(heterogeneous or homogeneous), and communication (virtual or face to face). Examples of the organisational variables are trust among colleagues (much or little), trust between the managers and employees (much or little), formality (formal or informal), centralisation (much or little), and cultural variety (much or little). The developed CoP model can help companies in the design of CoP within their organisational contexts.

Figure 7.2 Conceptual model of relationships between organisational variables and components of communities of practice



[Source: Jassbi et al., 2015, p.22]

The preceptors play an important role in the QU PharmD programme because the students spend the majority of their time in practical placements, under the responsibility of those preceptors. The lack of clear preceptor involvement in the co-development team (E1) in the design phase of the programme has led to a lack of either involvement or collaboration with faculty liaisons in other key educational processes. For example, appropriate communication and reciprocal knowledge exchange between the preceptors and the faculty (E5), bi-directional shadowing between faculty liaisons and preceptors (TS3), integration of academics and practitioners in the curriculum (C5) and collaboration between academics and practitioners in assessment (A4) were not evident in the PharmD programme.

It is important to reconsider the important role of the preceptor, involve them in key decisions and processes, and create channels for their communication and collaboration with the faculty academics. This will ultimately enhance full integration between theory and practice, and between research and practice, which is an important outcome of the CoP framework (O4). The significance of the preceptor role in student learning was highlighted by Morley (2016), who explained that when nursing students spend a longer period of time close to their mentors, they are exposed to various aspects of real professional practices, from which they learn the role of a qualified nurse.

The results of this research about the importance of integration between the preceptors from the practice sites and the academics from the university also support the findings of previous research. For example, Weston and Hudson (2014) suggested that the integration between the preceptor community and the university community, to form and act as an 'academy of learning', is beneficial for the preceptors, the university and the students. Woods, Cashin, and Stockhausen (2016) found that there was a disconnect between the available health educator standards at universities and the actual professional practices and values demanded by their workplaces, which is a disadvantage for nurse educators. They noted that the absence of national standards for nurse educator practices is an international problem that negatively affects the educational role of nurse educators and their professional identities. They suggested that developing a 'CoP' framework for nurse educators could solve this problem.



The role of the CCAPP accreditation standards was evident in the overall design of the QU PharmD programme (E3), which has led to alignment between the accreditation standards and the course requirements in curriculum planning (C4). However, both E3 and C4 are categorised as implicitly and partially evident, and not as fully evident elements, because of the lack of an equally important alignment with governmental drivers and requirements. The importance of the governmental role and support for CoP initiatives was emphasised by Kothari et al. (2015) who examined knowledge and skills exchange among health professionals through CoP-based webinars. This examination suggested that CoP efforts to stimulate practice changes would be beneficial when supported by multiple levels in the health system and institutions, and by the government.

The power of the CCAPP accreditation standards is demonstrated in the implementation of several important elements of the CoP framework, without the explicit recognition of their pedagogical significance, which is problematic. For example, the preceptors were involved in various CCAPP accreditation activities during the accreditation visits, because this is required by the accreditation standards, however, they were not part of the co-development team (E1), as discussed in the previous section. Another problem associated with relying on the power of the CCAPP accreditation standards is that accreditation agencies generally consider student assessment as their drive to learning, which was illustrated by the perspectives and quotes of the CCAPP administrator. Whitehead et al. (2014) discussed the problematic power of accreditation agencies in influencing the design of educational programmes. They argued that accreditation agencies are taking the lead in directing the curriculum requirements and affecting assessment practices. Frenk et al. (2010) argued that the accreditation process is associated with two major concerns: goals and the motivation of the accreditation processes, and the lack of integration between the global accreditation standards and the local specific drivers. Hence, Frenk et al. (2010) suggested involving all stakeholders, such as professional educators, students and novice professionals, professional bodies, universities, non-governmental institutions, and international agencies, in creating contextually suitable accreditation standards that aim to meet the local health environment demands.

### ***C. Challenges to the implementation of the CoP***

All challenges suggested for the successful implementation of the CoP were evident in the QU PharmD programme, as illustrated in Table 7.1. The different interpretation of CoP learning theory, associated with a lack of communication about its measures and outcomes (CH1) is a key challenge that has prevented the existence of several key aspects of the educational process pillars.

The findings of this research suggest that designers, policy makers, faculty and preceptors were originally not developed as educators. Instead, the majority of the designers and the faculty were educated as pharmacy practitioners, who then selected an academic career path and built up their knowledge and skills mainly through an advanced academic qualification, experience, and personal involvement in professional development opportunities, when available. Whereas, the preceptors were educated as pharmacy practitioners, who selected a clinical practice career and then were selected by the academic programme to act as educators for students. This general lack of education as educators resulted from the lack of consideration of the significance of learning theories, such as CoP, and other fundamental pedagogical topics, which is a challenge.

For the policy makers, this lack of consideration has been reflected in the lack of reference to learning theories and other pedagogical subjects in the governmental and accreditation drivers. Consideration of the learning theories and other pedagogical subjects by the designers in the design stages and their application by the educators in the implementation stages thus became unnecessary.

The lack of consideration of the learning theories has also resulted in the absence of communication of the pedagogical principles of those theories to preceptors by the academic programme. For example, in QU PharmD programme, some of the preceptors instinctively implemented several mentoring strategies (TS2) without being formally oriented to those strategies. Evidence of the existence of this teaching strategy is considered partial, however, because it was not consistent. This resulted in variable learning experiences for students at different practice sites, and consequently, variable gains in knowledge, skills and professional competence. Furthermore,

preceptors were not oriented to the existence of the different learning styles of students, which affected their preferred pedagogical models. This again suggests that the absence of explicit references to the necessity of formally orientating preceptors to pedagogical concepts in the CCAPP and the MOPH governmental standards is problematic. Simply, the lack of reference to pedagogies in the standards resulted in the lack of implementation.

One solution to this problem is the gradual building of a critical mass of pharmacy educators, who are trained as pharmacists and educators at the same time, as suggested by the pharmacy education scholar in Section 4.7.1. This critical mass of pharmacy educators, acting as designers, policy makers, faculty or preceptors, would realise and reinforce the importance of learning theories in educational practices. The formation of a critical mass of educators is consistent with Weston and Hudson's (2014) 'academy of learning' suggestion, discussed earlier. Juvova et al. (2015) highlighted the importance of formally mentoring educators at practice sites in the theory of education. They explained that practice teachers could only be successful and competent as practice educators if they receive adequate and comprehensive theoretical pedagogical professional development training. They noted that to be effective, this training should take place prior to, rather than after, practicing this important role.

Another challenge for the QU PharmD programme was the time constraints (CH2). Neither the CCAPP accreditation standards nor the governmental policies clearly indicated a fair procedure for recording the time spent on faculty liaison visits to the practice sites or the time spent by the preceptors in mentoring PharmD students in their workloads. This lack of clear guidance about the workload in the policy documents resulted in a lack of faculty involvement and satisfaction (E3), and in a lack of consistent shadowing practices (TS3), which consequently led to partial integration (O4) and incomplete improvement in the performance of members and the organisation (O2). Unfortunately, few studies in the literature discussed the optimal frequency of faculty liaison visits to practice sites to implement a proper partnership between academia and practice for the benefit of student learning (Wilbur, Paiva and Black, 2015).

#### ***D. Implicit versus explicit implementation of CoP theory***

The lack of understanding of learning theories and their significance has led to the implicit implementation of some practices. This has led to a level two disconnect between the learning theories and educational practices, an “implicit disconnect” in QU PharmD programme, as explained in Section 7.2.1.

This means that all partially or fully evident CoP framework elements of the education process pillars, the enablers or the outcomes were implicitly evident in QU PharmD programme without a full understanding of CoP framework or an intention to apply it. For example, knowledge recontextualisation (C2) and social and professional acceptance (TS5), were generally implemented, with few inconsistent practices across different sites. However, since the evidence of their existence in the programme was not associated with an intention to apply a particular learning theory, such as CoP, or with an understanding of the significance of CoP, the existence of these two elements (C2 and TS5) is implicit, rather than explicit.

It is important to note, however, that the full or partial evidence of this implicit implementation has in some cases led to the achievement of the desired outcome, such as skills and disposition development (O1), but not to the achievement of others such as improved member and organisational performance (O2). This again highlights the importance of the comprehensive and explicit implementation of CoP theory.

The fact that elements of the CoP learning theory are implicitly implemented in medical education was supported by Spilg, Siebert, and Martin (2012), who argued that the social aspects of learning and some elements of CoP theory are “embedded” key components of the medical education tradition, which are represented by gaining tacit knowledge and medical expertise. The implicit implementation, rather than explicit, applies to other professional education programmes.

#### ***E. Partial versus comprehensive implementation of CoP theory***

Finally, the lack of understanding and communication of the significance of learning theories in designing education programmes has led not only to the implicit

application of CoP theory, but also to either a partial application of the key elements of the CoP framework and other theories, or to a complete absence of those elements.

The developed CoP framework was based on the CoP social theory of learning developed originally from constructivist learning theory, as explained in Section 2.3.7. It was felt that using one learning theory, the CoP, in the design and application of the PharmD programme enhanced the consistency between the curriculum planning, the teaching strategies and the assessment activities. In line with that, as indicated previously in Section 2.7, Botma et al. (2015) noted that teaching and learning activities should ideally be aligned with outcome and assessment tasks through the development of conceptual frameworks for educational design. However, Botma et al. (2015) noted that educators tend to consider more than one learning theory in an educational programme, because they believe that each of these learning theories has a valuable element for an educational programme design. On the contrary, Sadideen and Kneebone (2012) explained that creating an educational framework based on one learning theory could facilitate the prediction of the best teaching strategies in a particular setting, such as practical skills teaching. This facilitates consistency. However, they also highlighted that the overlap between various learning theories makes the creation of a consistent framework, based on a selected theory, challenging. For example, they argue that the constructivist learning theory is an overarching theory for several theories that are based on the learner-facilitator interaction, motivation, reflection, and practical placement concepts.

The partial application of key elements of CoP framework is demonstrated by several examples in this research, some explained in this paragraph. Firstly, the existence of both formal and informal learning (C1) was partially evident; while both formal and informal learning were applied, only formal learning was stressed by the educators and in the documents.

Secondly, in spite the full implicit implementation of recontextualisation of knowledge by students (C2), as the findings suggest, there was no evidence of the presence of appropriate tools to assess this particular aspect of the curriculum. This again highlights the lack of full integration between curriculum, teaching strategies and assessment. O'Neil and Berdine (2007) suggested undertaking several measures

to assess students' knowledge transfer, such as conducting a pre- and post-assessment of knowledge and skills and allowing students to identify their own perceptions of their learning and ability to apply theoretical knowledge in a practical context. Wilbur (2015) argued that students could predict the format of OSCE assessment, which prepares them to perform well in it. This makes OSCE assessment less of an indicator of a student's real performance in actual patient care. Similarly, she argued that the basis of assessment tools that use checklists in translating student performance into numeric scores jeopardises the full assessment of student ability. Wilbur (2015) concluded, in her critical evaluation of the assessment tools used in QU PharmD programme, particularly the OCE summative assessment, that there is a need to assess students with more authentic approaches, in actual patient care environments that are more comprehensive, such as the use of narrative descriptions of student performance as a replacement for grades.

Thirdly, the partial application of the theory is clear in the planning of the practice placement details (C3), such as their sequence and duration. Despite giving careful thought to the number of practical placements, the sequence and duration of some practical placements were not appropriate. This was linked to the number of preceptors (CH6) at the practice sites and to the lack of regulatory policies about time requirements and the student role in the practical placements (E7). The incomplete planning of the placement details affected student participation and belonging to the practice sites, their professional identities and confidence (CH5), and their movement from being peripheral members in the professional community to being more core members (O3). All of these factors subsequently affected member and organisational performance (O2). The significance of planning placement details is consistent with Spilg, Siebert and Martin's (2012) conclusion that extended participation in CoP activities for longer durations enhances the development of stronger professional identities and socialisation, as well as a student's shift from being a peripheral member of the community to being more central.

It is important to note that students develop several professional identities as they move from one practice site to another, which also confirms the importance of the thoughtful planning of the duration and sequence of practice placements. Trede, Macklin, and Bridges (2012) suggested that being in multiple practice worlds or

communities affects the development of a student's professional identity. They noted that identity development is complex, because it is affected by the specific discipline, versus generic professional practices. They proposed that educational programmes should prepare students for an increasingly fluid, rather than fixed, professional identity as a response to various practice contexts. Students in each placement become members in a new CoP, which is aligned to the “nexus of multi-membership” concept (Wenger, 1998) explained in Section 2.7. Noble et al. (2014) explained that several key milestones in pharmacy students' experiences affect the development of professional identities. When they enter pharmacy school, when they are introduced in the classroom to an ideal way of practicing pharmacy, when they face the tensions of moving between different learning communities from classroom to placements, and when they realise their real practice in placements. Noble et al. (2014) argued that pharmacy students are challenged when managing the conflicts between these different experiences, which negatively impacts on their professional identities. This needs attention and management by academic programmes.

### **7.3. Case study-developed theory**

Overall, the findings of this research answer the overarching research question by addressing all research sub-questions, as explained in Sections 7.2.1, 2.2.2 and 7.2.3. The findings suggest that the developed CoP framework is a useful theoretical instrument for analysing the evidence of CoP theory implementation in the design and application of the QU PharmD programme. Through the CoP framework, the PharmD programme was placed at the “implicit disconnect” level. Examination of the CoP framework showed that various elements of CoP framework were categorised as fully or partially evident or absent in the educational practices in the programme.

The pedagogical issues and outcomes associated with a lack of understanding and consideration of CoP learning theory in the design and implementation stages of the QU PharmD programme have led to the proposal of a case study-developed theory about the interplay between learning theories and educational practices. This case study-developed theory has three main aspects.

The first aspect addresses the need for the explicit, rather than implicit, implementation of learning theories in the education programme practices. This further suggests that the education programme should aim to achieve the “no disconnect” level, where the educational practices are explicitly aligned and connected to a learning theory.

The second aspect addresses the need for the complete and comprehensive, rather than partial and fragmented, implementation of a particular suitable learning theory in an educational programme. This is important because the components of learning theories, as is the case in the CoP, tend to be aligned and interrelated to each other, which impacts on the quality and consistency of student learning experiences.

The third aspect addresses the appropriateness of CoP theory, represented by the theoretical CoP framework instrument developed, for designing and analysing PharmD programmes, because it resolve the main pedagogical concerns highlighted in this and previous research.

With these three main aspects in mind, the case study-developed theory is:

The design and practices of educational programmes should be based on the comprehensive and explicit implementation of an appropriate learning theory, which is potentially the CoP learning theory in PharmD programmes.

## **7.4. Strengths and limitations of the CoP framework**

The development of the CoP framework is a key step in this research, and informed the analysis of the QU PharmD programme. It is important to reflect on the major strengths and weaknesses of the framework to improve its application in further research or other educational programmes.



### **7.4.1. Strengths**

The CoP framework was developed based on an extensive and rigorous literature review, using the Matrix Method (Garrard, 2013), from various healthcare professional education resources, not solely pharmacy education. During its development, it was peer reviewed by scholars with varied healthcare educational expertise, not solely pharmacy expertise. This broad exposure to several professional healthcare education backgrounds enhances the utility of the CoP framework in various professional healthcare education programmes.

The CoP framework was developed as a theoretical instrument to be used either in guiding the design of new healthcare professional programmes or analysing the evidence of CoP theory in existing ones. Structuring the framework in six major sections and detailed subsections is a novel addition to the education literature, which allows its application in the comprehensive analysis of an educational programme or in the analysis of particular and selected components of an educational programme. The CoP framework demonstrates its applicability for a comprehensive analysis of the existing QU PharmD programme in this research.

### **7.4.2. Limitations**

During the development stage, CoP framework was peer reviewed by several scholars from healthcare education disciplines, however, this peer review did not include critique through a particular criterion or method, such as that used in Botma et al. (2015). The expert evaluation of Botma et al.'s (2015) conceptual framework used the criteria set by Tastle, Wierman, and Dundum (2005). These criteria entailed an investigation of the clarity, appropriateness, applicability, transferability, credibility, importance, and trustworthiness or validity of the framework. It is important to note that the lack of evaluation criteria in the peer review of the CoP framework did not affect its applicability in this research, but could have increased its credibility and trustworthiness.

The developed CoP framework is not a practical step-by-step guide to building a CoP, Rather, it is an evidence-informed review for the purpose of creating a theoretical

instrument, which makes it interesting to a scholarly audience, policy makers and educators. The framework did not provide a practical step-by-step guide for two reasons. Firstly, professional practice changes, which are based on CoP implementation, do not generally take place without system, policy, cultural, and governmental support (Kothari et al., 2015). Secondly, the success and maturation of CoP are not linear processes, and they need time to develop. This suggests the need for a sequential application of its elements and a periodic evaluation of its achievements (Bertone et al., 2013). Again, the absence of a practical guide did not affect use of the framework in the research, or in potential similar research.

## **7.5. Strengths and contribution of this research**

This research has both theoretical and practical strengths and significance.

### **7.5.1. Theoretical strengths and significance**

This is the first research study that pedagogically analyses and evaluates the appropriateness of the use of the CoP learning theory in the pharmacy education setting (in the QU PharmD programme) through the development of a novel CoP theory-informed framework. The novel development of the six key components of the CoP framework based on available educational literature, the discussion of the way they interact, and the allocation of sub-elements to each component, facilitated the application of the framework as an instrument in the design or analysis of professional healthcare education programmes.

This case study also provides a detailed description of the nature of any type of disconnect between learning theory and practice in an educational programme, by categorising the disconnect into four distinct levels. This description is represented by the case study-developed theory, Section 7.3, which facilitates a better understanding of the interplay between learning theories and educational design and practice, not only in the QU PharmD programme, but also in any academic professional healthcare programme, thus contributing to the debate about the role of learning theory in the design of programmes generally.

### **7.5.2. Practical strengths and significance**

This case study provides a detailed description of the practical application of the novel CoP theoretical instrument in the analysis of the QU PharmD programme, highlighting its strengths and weaknesses. It demonstrates the efficacy of the framework and promises the transferability of this application to other settings.

This research presents the accreditation agency view of the role of learning theories and their interaction with the accreditation standards, and it sheds light on the power of accreditation agencies and their effect on the disconnect between learning theories and practice. It also demonstrates issues associated with adopting and/or adapting a Western programme, considered as a best practice model, in a Gulf context, complying with international accreditation requirements, while considering the needs of the local context. The understanding of the effect and power of accreditation, together with the impact of customised best practices for the needs of the local context, is essential for designers, policy makers and education scholars as regards their contributions to curriculum reform initiatives and the worldwide challenge to integrate professional practices with theoretical knowledge.

Finally, this case study uses its findings and draws upon the existing literature to offer practical, scholarly, and theoretical recommendations, discussed in Section 7.7, about the effective use of CoP theory. These recommendations are fundamental for designing or enhancing the design of PharmD programmes, specifically, and professional healthcare education programmes, more generally.

### **7.6. Limitations of this research**

As with any research, this research has several limitations. Recognising and reflecting on these limitations is important for data analysis and interpretation, and for the conclusions and recommendations for future research. These limitations and the actions undertaken by the researcher to counteract their negative effect are addressed:

- In this case study, the researcher was not only a researcher seeking answers to research questions, but was also a faculty member. These multiple roles had the advantage of giving her a connection with the research context, which is useful in the case study approach, and to provide useful information that could be used for interpretation. However, the disadvantages of these multiple roles include biases in the respondent responses, to be socially desirable and comparable to the researcher's perspectives, and respondents potentially being less explicit in their responses because of the researcher's familiarity with the phenomenon. In Stage Four, therefore, an external researcher conducted the FGs for the students and the faculty to reduce the impact of potential power imbalance and conflict of interest. Nevertheless, the researcher conducted FGs and interviews on occasions when there was no potential power imbalance or conflict of interest. For example, the researcher conducted FGs when she was less familiar with the context or groups of participants, such as the preceptors. Also, the researcher conducted interviews when they were expected to discuss topics related to the PharmD programme design, accreditation, or learning theories, which resulted in the researcher interviewing the PharmD designers, the CCAPP administrator and the pharmacy education scholars, respectively.
  
- During data collection, policy makers within the Qatari context were not considered for interviews or a FG because the designers of the QU PharmD programme had a deep understanding of the previous and current role of policy makers in the pharmacy profession and education. The researcher considered this deep understanding as adequate for understanding the interaction between governmental policies, learning theories and educational design. However, gaining the perspectives of policy makers could have given a deeper understanding of the role of governmental drivers in the disconnect between theory and practice, and the consequences of this disconnect on the pharmacy profession in Qatar.
  
- During data interpretation, some elements of the CoP framework were difficult to categorise as evident or not evident in the QU PharmD

programme. These elements were either evident in some aspects and not in others, or the data included conflicting opinions about its evidence. These elements were grey areas, and a continuum between existence and non-existence, which required the researcher to engage in interpretation and to create a category for partially evident elements in later cycles of data interpretation, as discussed in Section 7.2.3. The researcher's interpretation of this grey area could potentially reduce the reliability of the application of the CoP framework, as it was open to her personal biases. However, this grey area and the 'partially evident element' category are more representative of real life.

## **7.7. Recommendations**

The recommendations of this research are categorised as follows: for policy makers and accreditation agencies; the practice sector; academic sector; and future research recommendations.

### **7.7.1. Recommendations for policy makers and accreditation agencies**

Following a particular learning theory and pedagogic approach helps to rationalise design choices and alignment between the appropriate education process pillars. This research indicates that CoP is relevant and appropriate in healthcare professional education generally, and pharmacy specifically. In that regard, local policy makers and accreditation agency administrators should realise the important role of CoP theory in improving professional practice, and in enhancing the learning experiences of students. They should therefore consider the key elements of CoP theory in their standards, licensing requirements and professional development programmes.

The accreditation agencies, local governmental authorities, and educational institutions should collaborate in developing their professional and educational requirements and standards, to ensure the graduation of competent practitioners who can work in an evolving healthcare environment.

Lastly, the accreditation, governmental and educational authorities should work together in creating policies that govern the scope of practice of students during their practical placements, the role, time commitment and reward of academic practitioners and faculty liaisons, and the role of academic and practice institutions.

### **7.7.2. Recommendations for the practice sector**

The practice sector should understand and recognise the role of CoP in enhancing professional practice, improving the practice environment, and increasing personal satisfaction and organisational performance, which is fundamental to CoP's implementation.

The practice sector should maintain its integration with the academic sector and improve the significant role of the preceptors. This can be achieved by supporting the preceptors' professional development as educators, considering their preceptorship time as part of their workload, rewarding them financially and professionally, and encouraging their collaboration with educators in the academic sector in professional practice, teaching, and scholarship.

Similarly, the practice sector should acknowledge the peripheral participation and contribution of students to the CoP as potential future employees, support their IPE and teaching, and invest in preparation for their important role.

### **7.7.3. Recommendations for the academic sector**

The academic sector should recognise that “no disconnect” between learning theories and practice is the ideal in education reform initiatives. Academic designers should explicitly and comprehensively integrate CoP into the design of new programmes and in the refinement of existing ones.

The academic sector should provide courses that outline educational, pedagogical, and learning concepts into their curriculum, such as medical education or pharmacy education courses. These courses introduce students to learning theories, teaching and assessment strategies, curriculum design and other pedagogical concepts. This

prepares students to perform future role as educators, whether practicing in the academic or practice sectors, and strengthens designer, educator, and preceptor application of the principles underlying the CoP framework. This introduction of pedagogically-based courses facilitates the gradual building of a critical mass of educators, who could perform as designers, policy makers, faculty or practitioners.

It is also recommended that the academic sector pay more attention to the key role of the preceptors by providing them with mandatory professional development activities and by orienting, mentoring and monitoring their preceptorship. Preceptors should be clearly and explicitly oriented to the learning outcomes of practice-based activities during practical placement, and to the key elements of CoP to which students should be exposed in a real CoP, as peripheral participants. Also, preceptors should be professionally and financially rewarded for their important roles. Professional reward includes giving them adjunct academic titles, developing an adjunct professional career path for them, and involving them formally in scholarship activities.

The academic sector should initiate and support the integration of the practice sector and the academic sector, and should mandate collaboration between academics and preceptors. This can be achieved by providing shadowing and reciprocal knowledge exchange opportunities, and by involving the preceptors in the design and refinement of the education programmes, and in their implementation. This collaboration requires faculty to liaise consistently and appropriately, through regular effective visits, in both student learning activities, and in mentor support. Similarly, the integration between science-based courses and clinical practice courses should be emphasised in the preparation, delivery and assessment of different courses, for the purpose of achieving the optimum curriculum integration.

Finally, it is recommended that the academic sector support the active participation of students at the practice sites by ensuring proper sequencing, and extending the duration of their practical placements, also by confirming that both formal and informal learning components of the curriculum are understood and addressed by preceptors. This ultimately improves the development of a student's professional identity, their participation, which is central to their learning, competence, membership in CoP and ultimately their overall learning experiences.

#### **7.7.4. Recommendations for future research**

The developed CoP framework, and the related disconnect levels can be used to guide and contribute to approaches for future research and educational reform. It is recommended that future research focuses on:

- Critically evaluating CoP framework using a specific well-established evaluation criteria set, such as that of Tastle, Wierman, and Dundum (2005).
- Evaluating the application of the CoP framework in the design of new PharmD programmes or professional healthcare programmes to determine its efficacy.
- Evaluating the application of the CoP framework in the analysis of other PharmD programmes or professional healthcare programmes with different contexts and settings than the QU PharmD programme, to determine the influences of these different contextual settings on the interplay between the CoP theory and educational practices.
- Examining the interplay of the role of external drivers, including accreditation agencies and governmental authorities, in the implementation of the CoP framework in the educational sectors.
- Establishing the curriculum or content of a mandatory professional development programme and pedagogical orientation workshops for the preceptors at the practice sites, based on key CoP theory elements, and evaluating the effectiveness of these programmes and workshops.
- Investigating appropriate and authentic assessment tools for knowledge recontextualisation.
- Exploring the interplay between the implementation of both CoP theory and IPE in professional healthcare education to create a comprehensive framework that guides their complementarity.
- Examining the appropriate balance between the number of preceptors in a practice based setting, the number of students and the typical number of members in CoP.



## 7.8. Conclusions

This research examines evidence of the implementation of learning theories in the design and educational practices of the QU PharmD programme, using a case study research approach. To achieve this aim, the appropriateness of CoP learning theory for the QU PharmD programme has been evaluated, with the conclusion that CoP theory is the most appropriate learning theory for PharmD and other professional healthcare education programmes. A novel CoP theory-informed framework has thus been developed, comprising six key elements, for use in either designing new professional healthcare education programmes or analysing the evidence of CoP application in existing ones.

In this case study, the CoP framework is used as a theoretical instrument to analyse the evidence of CoP learning theory in the QU PharmD programme. This analysis demonstrates the effectiveness of the CoP framework for this application and sheds light on the nature of the disconnect between CoP learning theory and the educational practices in the QU PharmD programme. After conducting an in-depth analysis, the case study concludes that the disconnect in the QU PharmD programme is at the “implicit disconnect” level, which means that some elements of the CoP framework were implicitly evident in the programme. This conclusion suggests that the challenges faced in the QU PharmD programme and the associated consequences for the learning experiences of the students are caused by the implicit disconnect. This conclusion facilitates the creation of the case study-developed theory about the significance of the full and explicit implementation of learning theory in the design and application of educational practices. Finally, this conclusion calls for better integration of academic, practice, accreditation, and governmental sector efforts in professional healthcare educational reform initiatives, to achieve the optimal connection between learning theories and educational practices in professional healthcare programmes, particularly PharmD programmes.

## **7.9. Summary of chapter**

This chapter addressed each research question by providing a discussion of the findings identified in all stages of the research. The answers to all research questions were integrated to answer the overarching research question and frame the case study-developed theory, and the research conclusions, implications and limitations. The chapter ended by providing recommendations for policy makers, accreditation agencies, practice and education institutions, and for future research.

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## Appendices

1. Appendices related to ethics
  - 1.1. QU ethical approval for academic year 2011-2012
  - 1.2. QU ethical approval for academic year 2012-2013
  - 1.3. QU ethical approval for the remaining period of the PhD
  - 1.4. University of Bath EIRA1 form
  - 1.5. QU-IRB request for ethics approval form
  - 1.6. Example of consent form
  - 1.7. Example of PIL
  - 1.8. Example of topic guide Stage Two
  - 1.9. Example of topic guide Stage Four
  - 1.10. External research confidentiality agreement
2. Appendices related to literature review
  - 2.1. Search term for stage three
  - 2.2. Other search terms for literature review
  - 2.3. Example of review matrix of Stage Three
3. Extract of an unanalysed transcript
4. Appendices related to data analysis
  - 4.1. Example of analysed transcript by colour-coding in Stage Two
  - 4.2. Example of analysed transcript by NVIVO in Stage Four
  - 4.3. Example of Excel sheet that contain categories of data analysis with quotes and supervisors comments-Stage Four
5. Extract of the research diary
6. The CoP framework (detailed)

## 1. Appendices related to ethics

### *1.1. QU ethical approval for academic year 2011-2012*



Qatar University  
Institutional Review Board  
(QU-IRB)

December 8, 2011

Banan Mukhalalati  
College of Pharmacy  
Qatar University  
Tel.: 4403-5566  
Email: [banan.m@qu.edu.qa](mailto:banan.m@qu.edu.qa)

Dear Ms. Banan Mukhalalati,

**Sub.: Research Ethics Approval**

**Ref.: Project titled, "Evaluating the effectiveness of the Pharm D in Developing Advanced Competencies in Pharmacy Practice- (A Comparison of programs in Qatar and Canada.)"**

We would like to inform you that your application along with the supporting documents provided for the above proposal, has been reviewed by the QU-IRB, and having met all the requirements, has been granted research ethics approval.

Please note that all approvals are valid for a period of one year. Renewals or any changes/modification to the original submitted protocol should be reported to the committee to seek approval prior to continuation.

Your Research Ethics Approval No. is: **QU-IRB 95/11**

Kindly refer to this number in all your future correspondence pertaining to this project.

Best wishes,

Dr. Khalid Al-Ali  
Chairperson, QU-IRB

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Qatar University-Institutional Review Board (QU-IRB), P.O. Box 2713 Doha, Qatar  
Tel +974 4403-5307 (GMT +3hrs) email: [QU-IRB@qu.edu.qa](mailto:QU-IRB@qu.edu.qa)

## 1.2. QU ethical approval for academic year 2012-2013



### Qatar University Institutional Review Board QU-IRB

May 21, 2013

Banan Mukhalalati  
(PhD Candidate)  
College of Pharmacy  
Qatar University  
Tel.: 4403-5566  
Email: banan.m@qu.edu.qa

**Subject: 2<sup>nd</sup> Year Renewal + Change Approval on QU-IRB 95/11 dated Dec. 8/2011**  
**Project Title: Evaluating the effectiveness of the Pharm D in Developing**  
**Advanced Competencies in Pharmacy Practice- (A Comparison of programs in**  
**Qatar and Canada.)"**

Dear Ms. Banan,

Please note that the **changes** reported to QU-IRB on the originally submitted application for the above project are approved by the committee. Furthermore, the approval is renewed for another year effective December 8, 2012. Request for next renewal if required should be submitted to IRB at least one month prior to the expiry.

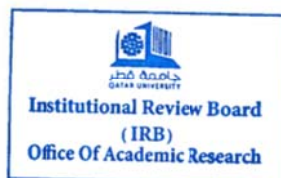
We reiterate that changes/modification or additions to the original submitted protocol should be notified to the QU-IRB to seek approval prior to continuation.

Kindly refer to your research ethics approval number issued by QU-IRB in all your future correspondence pertaining to this project.

Thanking you for your cooperation and best wishes.

A handwritten signature in blue ink, appearing to read "K. Alali".

Dr. Khalid Al-Ali  
Chairperson, QU-IRB



### 1.3. QU ethical approval for the remaining period of the PhD



## Qatar University Institutional Review Board QU-IRB

March 02, 2015

Ms. Banan Mukhalati  
P.O. Box 19920  
Tel.: 55844783  
Email: [banan.m@qu.edu.qa](mailto:banan.m@qu.edu.qa)

Dear Ms. Banan Mukhalati,

**Sub.: Research Ethics Review Exemption / PhD Project**  
**Ref.: Project titled, "Examining the Implicit and Explicit Educational Theories in the PharmD Programme at Qatar University: A Case Study"**

We would like to inform you that your application along with the supporting documents provided for the above proposal, is reviewed and having met all the requirements, has been exempted from the full ethics review.

Please note that any changes/modification or additions to the original submitted protocol should be reported to the committee to seek approval prior to continuation.

Your Research Ethics Approval No. is: **QU-IRB 404-E/15**  
Kindly refer to this number in all your future correspondence pertaining to this project.

Best wishes,

A handwritten signature in blue ink, appearing to read 'K. Alali'.

Dr. Khalid Al-Ali  
Chairperson, QU-IRB



## 1.4. University of Bath EIRA1 form

### ETHICAL IMPLICATIONS OF RESEARCH ACTIVITY

University of Bath

#### COVER NOTE FOR EIRA (Ethical Implications of Research Activity) 1 FORM

The University of Bath is committed to carrying out its research and teaching, enterprise and consultancy activities within an ethical framework. It requires staff to consider the potential ethical implications of new research and to monitor on-going projects. Project Leads must ensure that the work is conducted in a manner appropriate to promoting good practice, demonstrating proper use of public funding, respecting human values, building support for research and enterprise and protecting the University's good reputation.

The EIRA 1 form (available at: <http://www.bath.ac.uk/research/governance/ethics/>) must be completed to accompany all research grant applications.

Additionally, it is required for

- KTP (Knowledge Transfer Projects)
- HEIF (Higher Education Innovation Funding) bids and
- all consultancy projects.

Whilst the EIRA form is not currently required in the following situations:

- travel grants below £1,000
- extension to a project or bursary (where this was a continuation of the original project but would be required where a new piece of research was being undertaken)
- unfunded research
- internally funded research (except HEIF)
- patents and licensing

regard should, nevertheless, be had for any ethical implications. It is anticipated that unfunded research may require an EIRA form to be completed in the future.

It is incumbent upon every researcher to ensure that ethical issues are considered initially and at intervals during a project and, where identified, appropriately managed. Researchers may wish to consider using the EIRA 1 template for these other research-related activities, or as an aid to the consideration of the ethical implications of student projects. Where research grant applications are submitted jointly by departments, a copy of the EIRA form should be held in all collaborating departments.

When conducting an audit or service evaluation, please consider whether an EIRA form should be used eg because the project involves human subjects or access to personal information or to confidential corporate or company information. (An Ethical Review is not normally required for Audit or Service Improvement projects in the NHS.)

#### Guidance

There is an EIRA Process flowchart at:

[http://www.bath.ac.uk/research/pdf/ethics/EIRA\\_process\\_flowchart.pdf](http://www.bath.ac.uk/research/pdf/ethics/EIRA_process_flowchart.pdf).

1. The *Ethical Implications of Research Activity* 1 form should be completed by Principal Investigators (PIs) / Project Leads. The PI/Project Lead will pass the completed form to a Second Reader and then on to the Head of Department/School (to accompany the RS1 for a research grant proposal). The Second Reader role definition is available at: <http://www.bath.ac.uk/research/governance/ethics/>. When the Head of Department/School has signed the form, it should be passed to the Departmental/School Research Ethics Officer (DREO), who will review issues for action and inclusion in the Departmental Annual Monitoring Report. For professional service departments, the completed form should be passed to the Executive Officer (Research) in the Vice-Chancellor's Office.

The role of the DREO is described at: <http://www.bath.ac.uk/statutory-bodies-committees/bodies-and-committees-senate/ethics/dreoroleddefinitionV4May2010.pdf>. If ethical issues are identified in KTP or HEIF projects these should be addressed jointly with the Department and Enterprise Knowledge Exploitation unit. Where significant ethical issues are identified on which additional guidance is required, this can either be sought within the Faculty/School (particularly where there is an Ethics Committee) or exceptionally from the University Ethics Committee.

2. If any significant issues arise during the project, the PI/Project Lead should report them to the Head of Department/School and DREO. An investigation may be conducted by the Department and, if appropriate, guidance sought within the Faculty/School/University (see 1 above). At the end of every project, to reflect good departmental practice, the PI/Project Lead should advise the DREO if the ethical issues changed during the course of the project and how they were managed.
3. The DREO will prepare an Annual Monitoring Report for submission to the Head of Department/School via any relevant Committees for review and to the University Ethics Committee for monitoring purposes (standard template EIRA2). The University Ethics Committee reports to Senate via its minutes.

A review of the ethical issues of all new projects is an integral part of the process of developing a culture of ethical awareness. A Bite Size Guide to Ethics is available at: <http://www.bath.ac.uk/research/governance/ethics/>.

Queries on the University ethics process can be sent to: [ethics@lists.bath.ac.uk](mailto:ethics@lists.bath.ac.uk)

*If you have any feedback on how this form or procedure could be improved, please contact the Secretary of Ethics Committee: [M.C.Henderson@bath.ac.uk](mailto:M.C.Henderson@bath.ac.uk)*



**EIRA (Ethical Implications of Research Activity) 1 FORM**

This template must be completed for all research grant applications, consultancies, KTP and HEIF bids. The form should be completed by the Principal Investigator/Project Lead and passed, via a second reader, to the Head of Department/School for approval along with other relevant forms, eg University's Research Proposal form (RS1).

The Head of Department will then sign and pass the EIRA form to the Departmental Research Ethics Officer for monitoring.

Please note that this procedure is intended to help PIs/Project Leads consider the ethical implications of their activity. Researchers/Project Leads are responsible for deciding, in conjunction with their departmental/School guidelines and professional body standards, whether a more extensive review is necessary.

**To be completed by Principal Investigator/Project Lead**

<b>Type of Project eg Research, Consultancy, HEIF, other</b>	Research
<b>Brief Title of Project</b>	Examining the Implicit and Explicit Educational Theories in the PharmD Programme at Qatar University: A Case Study
<b>Brief Description of Project (max 300 words)</b>	<p>This study explores the theoretical and pedagogical influences on the design, development and delivery of the Pharm D programme at Qatar University. A preliminary evaluation of the experiences of a range of stakeholders in the programme indicated that the current pedagogical structure of the PharmD programme appeared not to provide students with what they viewed as the knowledge they needed for practice. In addition, participants indicated that preceptors were not meeting student expectations. However, the faculty liaison provided a positive feature of the programme. From this it is postulated that there is a 'disconnect' between education theory and practice, and that this impacts on the student experience.</p> <p>This research project will explore the nature and extent of any potential 'disconnect' between education theory and education practice in the design of the PharmD programme at Qatar University and explore any impact this has on student learning. Specifically, through a Case Study design (Yin, 2009), focus groups with key stakeholders (students, academic staff, preceptors); interviews with programme designers and international pharmacy education experts, and the accreditation agency; and detailed document analysis; will be used to identify the relationship between education theory and education in practice on this programme. Through this project, we hope to illuminate the challenges of aligning education theory with education practice in the development of health professionals.</p>
<b>Names of Principal/other Investigators and Department or Name of Company (consultancy projects)</b>	<p>Ms. Banan Mukhalalati, Lecturer, College of Pharmacy, Qatar University, PhD student at University of Bath.</p> <p>Dr. Andrea Taylor, Director of Taught Postgraduate Programmes Department of Pharmacy &amp; Pharmacology, University of Bath, PhD Supervisor, University of Bath.</p>



	<p>Prof. Marjorie Weiss, Professor of Pharmacy Practice &amp; Medicine Use Head of Pharmacy Practice Group Department of Pharmacy &amp; Pharmacology University of Bath, PhD Co- Supervisor, University of Bath.</p> <p>Dr. Kerry Wilbur, Assistant Professor and Pharm D Director, College of Pharmacy, Qatar University, PhD local Supervisor, Qatar University.</p> <p>Prof. Michael Romanowski, Coordinator, Master of Educational leadership, College of Education, Qatar University, PhD local Supervisor, Qatar University.</p>		
<b>Contact email and telephone number</b>	<p>Banan:Banan.m@qu.edu.qa, +97455844783</p> <p>Dr Andrea Taylor: A.D.J.Taylor@bath.ac.uk, +447971546955</p>		
<b>Date</b>	30-9-2014		
<b>Previous ethical approval</b>	<table border="1"> <tr> <td>Yes</td><td>No</td></tr> </table> <p><b>If YES, please state which body has given approval and the date of approval:</b></p> <p>It is going though Qatar University IRB approval now, in parallel to this process.</p>	Yes	No
Yes	No		

**SECTION 1: TO BE COMPLETED FOR ALL RESEARCH GRANT APPLICATIONS, KTP, CONSULTANCY PROJECTS AND HEIF BIDS**

<b>Are there ethical implications concerned with the following general issues? If yes, please provide details below</b>	
<b>1. Funding source</b> (eg Are there any implications for disinterested inquiry or reputational risks?)	No
<b>2. Data collection, handling and storage</b> (eg Confidentiality – for consultancy projects, please refer to the confidentiality clauses within the contractual agreement, security, availability, length of storage, etc)	<p>All participants' data will be stored anonymously using a code system. Despite the cohort being small, we believe that this step, and the non-sensitive nature of the data being collected, will assist in maintaining participant anonymity.</p> <p>When the work is written up, each case group participant will be assigned a unique identifier, which has two parts. The first part is a role descriptor. This is relevant to the research as the role of the respondent is key in developing the ideas in the case study and thus in the way the data is analysed and reported. Within this role descriptor, participants will be referred to by using a unique number identifier (the second part of the identifier). Only the researcher will have the key to which respondent is which number.</p> <p>However, given the small number of respondents and the unique roles held by some of the study participants (e.g. the accreditation agency president) it is possible that some of the</p>

	<p>respondents will be identifiable (even if the role descriptor were not provided, the nature of the responses could make the respondent identifiable). In such cases, the research participant will be fully informed of this before being recruited to the study. The consent form will also make this clear.</p> <p>As a further step to protecting the rights of participants, all participants will be sent transcripts of their interviews and invited to comment upon them and confirm their data. This provides a useful enhancement to the quality of the study and also provides a further opportunity for participants to review their data.</p> <p>Finally, participants will be free to withdraw their data from the study at any point at no penalty. This is also made clear on the participant information leaflet. At this point participants will be invited to confirm that their previously given data can continue to be included in the study..</p> <p>We will use secure data handling to try and assure anonymity for all participants. All the data will be kept in one of the following ways:</p> <ul style="list-style-type: none"> <li>- As an electronic copy, on a laptop that is password protected, only the researcher has the password</li> <li>- As a hard copy in a locked cabinet, only the researcher has the key.</li> <li>- The electronic copies of transcripts and data analysis that will be shared with the researcher's supervisors will be deleted from their laptops after reviewing and commenting on them.</li> </ul> <p>After 5 years the data will be destroyed in line with UK Data Protection Law.</p>
<b>3. Are you free to publish the results?</b> (eg Are there any restrictions raised by contract terms?)	Yes
<b>4. Future use of findings</b> (eg are there any ethical issues in how the findings will or could be used in the future?)	No
<b>5. Risk assessment</b> (eg Have hazards (a substance or situation that might cause harm) been identified and assessed? Is there likely to be any damage to / effect on the environment?)	No risk
<b>6. Conflicts of Interest</b> (eg Are you involved in any other activities/collaborations/relationships that may result in a conflict of interest with this research?)	No
<b>7. Competency to conduct research/project.</b> (ie Do you possess knowledge and skills compatible with	I am a PhD student supervised by 4 faculty

# **ETHICAL IMPLICATIONS OF RESEARCH ACTIVITY**

University of Bath

the demands of the investigation to be undertaken)	members who are experienced researchers.
<b>8. Compliance with professional body Codes of Conduct</b> (ie Will the research be conducted in compliance with professional body standards?)	N/A
<b>9. Location of research</b> (ie Will the research involve lone working or travel to areas that may be unsafe or at risk?)	The location of the data collection is Qatar. Interviews and focus groups will be conducted either in College of Pharmacy buildings at Qatar University or via the telephone. The researcher will have a co-facilitator when conducting the focus groups. For the interviews she will be on College premises within easy reach of colleagues. Hence there is no hazardous travel and only safe (and limited) lone working.
<b>Demonstration of Ethical Considerations</b> <i>Please outline the ethical issues which will need to be managed during the course of the activity.</i>	

This is a qualitative research study using a Case Study approach. As such individual pharmacy education professionals and students will be involved in the study. The study is seeking to explore the education theory and practice disconnect in the design of the PharmD programme by looking at the experiences of stakeholders and students. The key ethical issues arising from the study are presented and discussed below, to illustrate how any effects of these issues are being addressed:

#### **Informed Consent and Anonymity**

An email will be sent to all the research participants (full time students, faculty, pharmacy education scholars, Pharm D design team, preceptors and CCAPP president) informing them of the study and inviting them to participate.

The email will include the following:

- Information leaflet about the research and the various data collection tools and approaches used in it
- Informed consent form (as an example of what the potential participant should expect of the form). However, the real form will be administered, signed and collected at the data collection event.

The information leaflet will also contain information about the participants' right to withdraw their data from the study at any point and at no penalty, and that at this point they are offered the choice to withdraw previously collected data or maintain it.

As described above, a code system will be used to store any collected data anonymously. All data will be stored on a password-protected computer and in the anonymous form. The key to the code system will be stored in a separate location. It is possible that for at least one of the respondents, that they will be identifiable due to their office (CCAPP president). In this instance, although the data will still be stored anonymously, they will be advised that they are likely to be identifiable (by including this on the Participant Information Leaflet and Consent Form). However, given the nature of this study (the data being collected), the risk of harm from such 'on the record' accounts is minimal.

All participants will consent EACH TIME they provide data to the study.

#### **Power relations: In qualitative research settings**

It is widely acknowledged that the researcher has power over the participants within the research relationship (Fontes 1998). This relationship is guided by larger social structures such as gender, culture, linguistics and position authority that influence the data obtained.

The researcher recognizes that her previous interactions with the students as a faculty member might influence their willingness to fully disclose their feelings surrounding the topics in the study. The following measures will be taken by the researcher to enhance the reciprocal power and reduce her position authority power:

- An external researcher will conduct the interviews/ focus groups with the faculty and students to ensure that the potential participants do not feel that divulging their thoughts to a person who is known to them could be seen as disloyal or otherwise. However, the researcher will conduct interviews and focus groups with other participants (programme designers, rotation preceptors, CCAPP president, education scholars) so that she is able to immerse herself in these data and gains this vital data collection experience.
- All participants will be informed that the researcher is dealing with them in this setting as a PhD researcher and not as a faculty member; their responses would be treated as confidential and anonymously, both in focus groups and interviews, and, crucially, will not affect the grading of students or the relationship between the participants and the College.
- The PharmD Director is a gatekeeper in this research between the researcher and the students.
- The researcher has now changed her status to a full time student and has taken a leave of absence from work, which will reduce the probability of her influence in the research.
- The consent form signed by participants contains contact information for the researcher's supervisor, so that students can communicate with her if they had any concerns about power relations in this study, as needed.



<b>Specific Issues</b>		
<b>10. Does the research/project involve human participants in any way?</b> (Please note if you are processing personal data you need to tick 'Yes'.)	Yes	Complete Section 2
<b>11. Does the research/project involve animals in any way?</b>	No	Complete Section 3

**Declarations**

I confirm that the statements in Sections 1-3 describe the ethical issues that will need to be managed during the course of this research activity.

<b>Principal Investigator</b>	 <b>Signature:</b> <b>Date:</b> 30-9-2014	
<b>Second reader</b> (This will normally be a person <u>external</u> to the project team.)	 <b>Signature:</b> <b>Date:</b> 11 <sup>th</sup> November 2014	
<b>Head of Department/School</b>	<b>Signature:</b> <b>Date:</b>	

**Please return this form to your Departmental Research Ethics Officer. (Issues will be monitored for incorporation into an annual departmental report to be submitted to the University Ethics Committee.)**

## SECTION 2: FOR COMPLETION IF YOUR RESEARCH/PROJECT INVOLVES HUMAN PARTICIPANTS

*If any of the answers to these questions are 'yes', please confirm in the space below how the ethical issues will be managed during the course of the activity.*

*Compulsory question for consideration by all disciplines:*

	Yes	No
<p>Will the study involve obtaining or processing personal data relating to living individuals, (eg involve recording interviews with subjects even if the findings will subsequently be made anonymous)?</p> <p>Participants will receive an email inviting them to participate in the study. This email contains an example of the consent form and the information leaflet for the research and will be sent to the participants at least one week before conducting the interview or focus group. The consent form will be distributed to participants (who after reading the email attend the data collection event) at the time of the data collection i.e. focus group or interview. The participants will be given the period between receiving the invitation and attending the data collection event to decide about signing the consent form or withdrawing. In they agree to participate, they will return the signed consent form at the start of the interview or the focus group.</p> <p>All participants' data will be stored anonymously using a code system. Despite the cohort being small, we believe that this step, and the non-sensitive nature of the data being collected will assist in maintaining participant anonymity.</p> <p>When the research data is written up, each case group participant will be assigned a unique professional role and numerical identifier. In some cases, the participant is the only member of this group (e.g. the accreditation agency president) and will be identifiable, therefore, the consent form that this person(s) signs, will clarify that they might be identifiable. In all the cases, no comment will be attributed to a specifically named individual. In addition, all participants will be sent transcripts of their interviews and invited to comment upon them prior to writing up.</p> <p>We will use secure data handling to assure anonymity. All the data will be kept in one of the following ways:</p> <ul style="list-style-type: none"> <li>- As an electronic copy, on a laptop that has a password, only the researcher has the password</li> <li>- As a hard copy in a locked cabinet, only the researcher has the key.</li> <li>- The electronic copies of transcripts and data analysis that will be shared with the researcher's supervisors will be deleted from their laptops after reviewing and commenting on them.</li> </ul> <p><i>Note: If the answer to this question is 'yes' you will need to ensure that the provisions of the Data Protection Act are complied with. In particular you will need to seek advice to ensure that the subjects provide sufficient consent and that the personal data will be properly stored, for an appropriate period of time). Information is available from the University Data Protection Website <a href="http://www.bath.ac.uk/internal/data-protection/">http://www.bath.ac.uk/internal/data-protection/</a> and <a href="mailto:dataprotection-queries@lists.bath.ac.uk">dataprotection-queries@lists.bath.ac.uk</a> Note: For Consultancy Projects you are encouraged to ask the client to arrange/liaise with living individuals and have the data delivered to you for analysis.</i></p>	*	

*Departments may amend the following list to include topics of particular relevance to their discipline(s).*

	Yes	No

**ETHICAL IMPLICATIONS OF RESEARCH ACTIVITY**

University of Bath

	Yes	No
1. Does the study involve participants who are particularly vulnerable or unable to give informed consent? (eg children, people with learning disabilities)		*
2. Will the study require the co-operation of a gatekeeper for initial access to the groups or individuals to be recruited? (eg students at school, members of self-help group, residents of a nursing home)	*	
3. Do you require a DBS (Disclosure and Barring Service) check and if so have you obtained the necessary documents and approval?		*
4. Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (eg covert observation of people in non-public places)		*
5. Will the study involve discussion of sensitive topics? (eg sexual activity, drug use)		*
6. Are drugs, placebos or other substances (eg food substances, vitamins) to be administered to the study participants and/or will the study involve invasive, intrusive or potentially harmful procedures of any kind?		*
7. Will blood or tissue samples be obtained from participants? <i>Note: If the answer to this question is 'yes' you will need to be aware of obligations under the Human Tissue Act, see further information at <a href="http://www.bath.ac.uk/research/governance/ethics/hta.html">http://www.bath.ac.uk/research/governance/ethics/hta.html</a></i>		*
8. Is pain or more than very mild discomfort likely to result from the study?		*
9. Could the study induce psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life?		*
10. Will the study involve prolonged or repetitive testing?		*
11. Will financial inducements (or other expenses and compensation for time) be offered to participants?		*
12. Will the study involve recruitment of patients or staff through the NHS? <i>Note: If the answer to this question is 'yes' you will need to submit an application to the NHS through IRAS, see: <a href="http://www.hra.nhs.uk/research-community/applying-for-approvals/">http://www.hra.nhs.uk/research-community/applying-for-approvals/</a> New web address</i>		*

**Section 2: Demonstration of Ethical Considerations**

*Please complete this section if any of the answers to the above questions are 'yes'.*

In this study the gatekeeper is the Director of the PharmD Programme at Qatar University. She is also a member of the study/supervisory team.

The researcher was previously an academic member in the College of Pharmacy at Qatar university. She is now a full time student (on scholarship leave from Qatar University). Since the researcher is a previous Faculty member and has a particular insight into the development of the programme, an external researcher will conduct the interviews/ focus groups with the faculty and students to ensure that the potential participants do not feel that divulging their thoughts to a person who is known to them could be seen as disloyal or otherwise. However, the researcher will conduct interviews and focus groups with other participants (programme designers, rotation preceptors, CCAPP president, education scholars) so that she gains the important insight from being immersed in these data and to gain important experience in data collection.

### 1.5. QU-IRB request for ethics approval form



## QU-IRB Request for Ethics Approval Application Form 1: Research involving Human Subjects

For QU-IRB Use Only:

Research No.:

Received on:

**Note to Applicants:** Please **TYPE** the details requested below and put **N/A** where the information is not relevant or not required on your part. Often filled application forms are sent back to researchers for additional information. If care is taken to provide sufficient details in the original application, then delays in the approval can be avoided.

Title of the Research Project:		ID:	
Examining the Implicit and Explicit Educational Theories in the PharmD Programme at Qatar University: A Case Study			
External Sponsor(s) / Collaborator(s):			
Dr. Andrea Taylor and Prof. Marjorie Weiss, University of Bath			
Expected start date January 2014		Expected end date June 2016	
<b>A.</b>	<b>Details of All Investigators</b>		
Name, Position & Department	PI, Co-PI Others: Specify	Faculty: Post-Doc. Student: Graduate / Undergraduate	Previous and/or Current Training related to Research
Ms. Banan Mukhalalati, Assistant Dean for Faculty and Student Affairs, College of Pharmacy, Qatar University	PI	PhD student at University of Bath	
Dr. Andrea Taylor, Director of Taught Postgraduate Programmes Department of Pharmacy & Pharmacology, University of Bath	Co-PI	PhD Supervisor, University of Bath	Experience in conducting evaluative research; teach research methods and research skills development. Member of Departmental Research Ethics Committee
Prof. Marjorie Weiss, Professor of Pharmacy	Investigator	PhD Co- Supervisor, University of Bath	Extensive research experience in a range



Practice & Medicine Use Head of Pharmacy Practice Group Department of Pharmacy & Pharmacology University of Bath			of methodologies; teach research methods; experience of doctoral supervision.
Dr. Kerry Wilbur, Assistant Professor and Pharm D Director, College of Pharmacy, Qatar University	Investigator	PhD local Supervisor, Qatar University	
Prof. Michael Romanowski, Coordinator, Master of Educational leadership, College of Education, Qatar University	Investigator	PhD local Supervisor, Qatar University	
<b>B.</b>	<b>Lay Summary</b> (Max 300 words) This should be accessible to non-scientist who is a member of the QU-IRB. Specify the research problems this project addresses		
<p>This study explores the theoretical and pedagogical influences on the design, development and delivery of the Pharm D programme at Qatar University. A preliminary evaluation of the experiences of a range of stakeholders in the programme indicated that the current pedagogical structure of the PharmD programme appeared not to provide students with what they viewed as the knowledge they needed for practice. In addition, participants indicated that preceptors were not meeting student expectations. However, the faculty liaison provided a positive feature of the programme. From this it is postulated that there is a 'disconnect' between education theory and practice and this impacts on the student experience.</p> <p>This research project will explore the nature and extent of any potential 'disconnect' between education theory and education practice in the design of the PharmD programme at Qatar University and explore any impact this has on student learning. Specifically, a Case Study design (Yin, 2009), with focus groups with key stakeholders (students, academic staff, preceptors); interviews with programme designers and international pharmacy education experts, and the accreditation agency; and detailed document analysis; will be used to identify the relationship between education theory and learning in practice on this programme and how this impacts upon student learning. Through this project, we hope to illuminate the challenges of aligning education theory with education in practice in the training of health professionals. We also aim to develop thinking about the use of social theories of learning in the education of health professionals.</p>			
<b>C.</b>	<b>Details of the Research</b>		
<b>C1</b>	A case study methodology is used in this research. Case study research is best adopted when using multiple sources of data to develop a complex and holistic investigation, enabling researchers to examine a phenomenon from the participants' perspectives (Baxter 2003). Yin (2003) indicates that a case study should be used to answer how and why questions, and when the researcher wants to understand the contextual conditions that are relevant to the investigated phenomenon. An initial research framework for this study is presented in Figure One.		
<b>C2</b>	<b>Subjects:</b> - PharmD students enrolled on the Qatar University (QU) PharmD program, cohorts:		

	<p>2011, 2012, 2014.</p> <ul style="list-style-type: none"> <li>- The QU PharmD programme designers.</li> <li>- Faculty members who participate in training QU PharmD students.</li> <li>- Preceptors who mentor the QU PharmD students at their advanced clinical internship sites.</li> <li>- Pharmacy education scholars.</li> <li>- CCAPP accreditation representatives</li> </ul>
C3	<p><b>Inclusion and Exclusion Criteria:</b></p> <p>In this research we have adopted a purposive sampling strategy, as it is important to select participants who know about the design of the PharmD programme, the students who have completed it and staff who support learning on it.</p> <p>Therefore, informants for this research are students, the design team, faculty, preceptors, the pharmacy education scholars and policy makers. Pharmacy education scholars, policy makers and members of the PharmD design team were considered the primary sources of data because they are able to comment on the education theories underpinning the pharmacy education and the PharmD program at QU. The students, faculty and preceptors will be used as a primary source of data because they can express their experiences and perceptions of the programme.</p> <p>Recruitment strategy: There are a number of different participants in this study and they require different forms of approach. For students on the programme, the approach is through a gatekeeper (the Director of Studies for the PharmD programme). Once cohort members are identified they will be sent an email explaining the background to the project and inviting them to participate. The email will include a copy of the Participant Information leaflet providing details about the research and the various data collection approaches being used in it and an Informed Consent form (as an example of what the potential participant should expect of the form). However, the real form will be administered, signed and collected at the start of data collection event. These documents are sent with this form.</p> <p>The email that contains an example of the consent form and the information leaflet of the research will be sent to the participants at least one week before conducting the interview or focus group. The consent form will be distributed to participants (who after reading the email attend the data collection event) at the time of the data collection i.e. focus group or interview. The participants will be given time at the start of the data collection event to decide about participating in the research and signing the consent form or withdrawing. In case of deciding to participate, they are expected to return the signed consent form prior to commencement of the interview or the focus group.</p>
C4	<p><b>What data collecting instruments will be used? (e.g., Interviews, Questionnaires, Measurements, etc...)</b></p> <p>This case study uses three types of data collection: individual interviews, focus groups, and document analysis.</p> <p>For the focus groups and interviews, topic guides have been developed based on the literature review, preliminary document analysis and propositions from the design of the study. Examples of these are attached.</p>
C5	<p><b>How will the results be analyzed?</b></p> <p>All focus groups and interviews will be audio recorded so that an accurate record of the</p>



	<p>event is captured.</p> <p>The data from the focus groups and interviews will be then transcribed and analysed using Thematic Analysis (Braun and Clarke 2013). The data collection and analysis will take place according to the stages of the study illustrated in Figure 1.</p> <p>Transcripts will be stored and analysed on the qualitative data software NVivo 10. The transcripts will be read and the researcher will develop a list of the codes. Through iterative analysis across all transcripts the codes will be joined to form themes. An additional independent researcher will re-read and check coding and theming to enhance the rigor of the study. Participants will be asked to verify that the codes and themes emerging from the analysis accurately reflect their perspectives, enhancing authenticity through respondent validation. These themes will be used to write a narrative that describes the findings.</p>							
C6	<p><b>Will results be acted on in any way? (e.g. will patients screened +ve be followed up/offered treatment?)</b></p> <p>The results will be used to enhance the development and the design of QU PharmD programme and other PharmD programmes.</p>							
C7	<p><b>Materials to be administered or used in the research: N/A</b></p> <p>i) <b>Drugs or Chemical Hazards:</b></p> <p>ii) <b>Biohazards:</b></p> <p>iii) <b>Radioactive Isotopes or Radiation:</b></p> <p>iv) <b>Special Diet:</b></p> <p>v) <b>Others (specify):</b></p>							
C8	<p><b>Possible hazards from using these materials: N/A</b></p> <p>i) <b>None:</b></p> <p>ii) <b>Contagious to people:</b></p> <p>iii) <b>Controlled Drug:</b></p> <p>iv) <b>Carcinogen:</b></p> <p>v) <b>Others (specify):</b></p>							
C9	<p><b>Approved by University Chemical and Biohazard Safety Committee: N/A</b></p> <table border="1"> <tr> <td>Yes</td><td>No</td><td>Pending</td><td>N/A</td></tr> </table>				Yes	No	Pending	N/A
Yes	No	Pending	N/A					
C10	<p><b>Approved by Radiation Safety Officer: N/A</b></p> <table border="1"> <tr> <td>Yes</td><td>No</td><td>Pending</td><td>N/A</td></tr> </table>				Yes	No	Pending	N/A
Yes	No	Pending	N/A					
C11	<p><b>Samples to be taken: N/A</b></p>							
C12	<p><b>Procedure: N/A</b></p>							
C13	<p><b>Other Tests: N/A</b></p>							
C14	<p><b>Where will the study be carried out?</b></p> <p>College of pharmacy, Qatar university</p>							

C15	<p><b>Please list possible risks, discomforts, inconveniences, side effects, and costs that could be experienced by the subjects:</b></p> <p>There are no physical risks, discomforts, side effects and costs that may impact upon study participants as the study involves interviews and focus groups addressing the experiences of respondents about their involvement with an educational programme of study. All interventions will take place at the College of Pharmacy, QU, or via telephone. There may be some inconvenience to participants in attending focus groups and interviews, but participants are freely recruited to the study so we believe this will not be an issue.</p> <p>Risk of harm to participants is extremely unlikely. However the researchers are aware that the following are small theoretically possible risks:</p> <ul style="list-style-type: none"> <li>- Students who participate in this study may feel that their progress on the programme may be affected in some way.</li> <li>- Staff may feel that any strong negative comment may affect their working relationships.</li> </ul> <p>Therefore, We have taken the following steps to reassure students and staff that their honest and open participation in this study will not be used to influence their progress on the programme or in their work:</p> <ol style="list-style-type: none"> <li>a. Students and staff are invited to participate on a voluntary basis and an email explaining the project and showing an example of the consent form will be sent prior to the intervention. This will give potential participants time to think about any issues which might arising in participating in the study</li> <li>b. A consent form will be administered at the beginning of the data collection event and will be completed prior to the data collection, giving time for participants to think about and discuss any ethical implications prior to participating in the data collection. They will be free to leave the event if they decide at this point that they do not wish to take part.</li> <li>c. Each case group participant will be assigned a unique role and numerical identifier. In some cases, the participant is the only member of the professional group (e.g. the accreditation agency president) and they will be identifiable, therefore, the consent form that such respondents sign, clarifies that they might be identifiable. In addition, all participants will be sent transcripts of their interviews and invited to comment upon them. We will use secure data handling to try and assure anonymity for the majority of participants.</li> <li>d. All data will be collected and stored securely and anonymously (on password protected computers and networks). Where, through their role or position, it is possible to identify a respondent; care will be taken to check with the participant that they are aware of this. We will also share analysed transcripts of interviews with respondents as part of the quality assurance processes of this qualitative study.</li> <li>e. Participants are free to withdraw their participation at any point in the study</li> </ol>


	<p>without any detriment. In this case, the participants will be offered the choice to withdraw the previously collected data or maintain it.</p> <p>f. An 'ombudsman' will be appointed from the Supervising Institution (University of Bath) to whom students can raise concerns if they feel the research is impinging on their study or working life.</p> <p>In qualitative research settings, it is widely acknowledged that the researcher has power over the participants within the research relationship (Fontes 1998). This relationship is guided by larger social structures such as gender, culture, linguistics and position authority that influence the data obtained.</p> <p>The researcher recognizes that her previous interactions with the students as a faculty member might influence their willingness to fully disclose their feelings surrounding the topics in the study. The following measures will be taken by the researcher to enhance the reciprocal power and reduce her position authority power.</p> <p>An external researcher will conduct the interviews/ focus groups with the faculty and students to ensure that the potential participants do not feel that divulging their thoughts to a person who is known to them could be seen as disloyal or otherwise. This external researcher will be very well briefed about the research. However, the Applicant will conduct the interviews and focus groups with other participants (programme designers, rotation preceptors, CCAPP president, education scholars) so that she gains the important insight from being immersed in these data and to gain important experience in data collection.</p> <ul style="list-style-type: none"> <li>- The PharmD Director is a gatekeeper in this research between the researcher and the students.</li> <li>- The researcher has now changed her status to a full time student and has taken a leave of absence from work, which will reduce the probability of her influence in the research.</li> <li>- The consent form signed by participants contains contact information for the researcher's supervisor, so that students can communicate with her if they have any concerns about power relations in this study, as needed.</li> </ul>
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<b>D. Informed Consent</b>	
<b>D1</b>	<p><b>What information will be given to subjects and how will it be given?</b></p> <p>Please find attached the consent form and the information leaflet. The study/form will be explained to the person prior to obtaining their consent and collecting the data to ensure they have understood what their involvement in the study will be. Participants will have time to consider whether they wish to participate, and there will be time for discussion of any issues immediately prior to the data collection event.</p>



D2	<p><b>From whom and how the Consent will be obtained?</b></p> <p>An email will be sent to all the programme participants (full time students, faculty, pharmacy education scholars, Pharm D design team, preceptors and CCAPP president) informing them of the study and inviting them to participate.</p> <p>The email will include the following:</p> <ul style="list-style-type: none"> <li>- Information leaflet about the research and various tools used in it</li> <li>- Informed consent form</li> </ul>
D3	<p><b>A copy of the consent form should be attached to include the following information :</b></p> <ul style="list-style-type: none"> <li>• Title, Purpose and Nature of the Research</li> <li>• A brief understandable description of the study, in level-appropriate language for the study group.</li> <li>• Clear explanation of the possible risks, harms and benefits to the subject.</li> <li>• Task and Time required of the participant and/or any remunerations</li> <li>• Costs, or voluntary participating in the study</li> <li>• Provides for the withdrawal policy</li> <li>• Description of any recording devices to be used.</li> <li>• Provides the opportunity to see the results</li> <li>• Fate of the Sample (Disposition and/or Storage for future use)</li> <li>• Provides for confidentiality</li> <li>• Gives contact information for researcher, supervisor (if appropriate)</li> <li>• Any additional information relevant to the Consent</li> <li>• Provides confirmation that all stakeholders/employers have been informed and approvals obtained</li> </ul> <p>The consent form is attached.</p>
<b>E. Confidentiality</b>	
E1	<p><b>How and where will the study data/sample be stored and secured?</b></p> <p>All the data will be kept in one of the following ways:</p> <ul style="list-style-type: none"> <li>- As a softcopy, on a laptop that has a password, only the researcher has the password</li> <li>- As a hard copy in a locked cabinet, only the researcher has the key</li> <li>- The softcopies of transcripts and data analysis that will be shared with the researcher's supervisors will be deleted from their laptops after reviewing and commenting on them.</li> <li>- After 5 years the data will be destroyed in line with UK Data Protection Law</li> </ul>
E2	<p><b>Will it be reused in the future?</b></p> <p>No</p>
E3	<p><b>How would subject's confidentiality be protected?</b></p> <p>All participants' data will be stored anonymously using a code system. Despite the cohort being small, we believe that this step, and the non-sensitive nature of the data being collected will assist in maintaining participant anonymity.</p> <p>When the work is written up, no comment will be attributed to a specifically named individual, although there will be reference to roles (design team member, preceptor,</p>

	<p>student</p> <p>We will use this anonymity and secure data handling to try and assure confidentiality.</p>
<b>F.</b>	<p><b>Any Other Information/Comments that could be helpful pertaining to this application</b></p>
<p>N/A</p> <p>The following documents are attached:</p> <ul style="list-style-type: none"> <li>- Participant Information Leaflet</li> <li>- Consent Form</li> <li>- Topic guide</li> <li>- Figure 1 that describes the research framework</li> </ul> <p>References:</p> <p>Fontes, L.A. 1998. Ethics in Family Violence Research: Cross-Cultural Issues. Family Relations, 47(1):53-61.</p>	

<b>G.</b>	<p><b>Declaration Statement from the Applicant</b></p> <p>I confirm that all information reported in this application form is true and accurate. I agree to report <b>ANY DEVIATIONS</b> from the reported procedures and methodologies to the QU-IRB. I agree to maintain adequate records of all procedures. I agree to become informed and comply with the principles outlined in the "Handbook for Ethical Rules and Regulations" as published by Qatar University and comply with all Acts and Regulations in the state of Qatar pertaining to the use of human subjects in research.</p> <p><b>Name:</b> Ms. Banan Mukhalalati  <b>Address:</b> P.O. box 19920  <b>Phone Nos.:</b> 55844783  <b>Email:</b> banan.m@qu.edu.qa  <b>Fax:</b></p> <p><b><u>Signature of the Applicant:</u></b></p> <p></p> <p><b><u>Signature of the PI:</u></b></p>
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Andrea Taylor

Signature of the QU supervisor:

Ferry Miller

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**Please do not write below this line. This part is for QU-IRB use only:**

Approval of the above procedures for a period not exceeding one year is hereby given:

Chairperson, QU-IRB: \_\_\_\_\_ Date: \_\_\_\_\_

Previous Protocol ID: \_\_\_\_\_

Approval Date: \_\_\_\_\_ Renewal Date: \_\_\_\_\_



### 1.6. Example of consent form



## **Examining the Implicit and Explicit Educational Theories in the PharmD Programme at Qatar University: A Case Study**

### **CONSENT FORM**

My name is Banan Mukhalalati, I work as a lecturer in the College of Pharmacy at Qatar University. I am currently doing my PhD in the University of Bath, UK. ☐ I invite you to take part in my PhD research that aims to examine the implicit and explicit educational theories in the PharmD Programme at Qatar University. ☐ Attached to this consent form you will find an information leaflet that gives you detailed information about the research study. If you have any questions arising from the information provided in the information leaflet, or anything that you would like to clarify, please feel free to discuss this with or my PhD supervisor me before you decide whether to participate in the study.

Once you have understood the research, and asked your questions, then you will be asked to sign this form if you wish to take part in my research. You will receive a copy of the signed form as well as from the information leaflet to take home as a record.

Please note that the Ethical Board at Qatar University and the Ethical Review Process of the Department of Pharmacy and Pharmacology at the University of Bath have approved this study.

Please complete this form if you consent to participate in the study.

- I have understood the purpose of the study that was explained to me in the ☐ information leaflet. ☐
- I understand that if I decide I no longer want to participate in this study, I can ☐ withdraw at any time, without any penalty. ☐ Researcher name: Banan Mukhalalati, August, 2014 ☐
- I understand that all reasonable steps will be taken to ensure that participants will not be identified, and all the data will be treated as confidential and stored

and processed anonymously. *If I am identifiable because of the nature of my professional role, I understand that I will be sent the transcript of my interview to check and verify prior to its inclusion in this study.*

**Contact information:**

Should you wish to contact the researcher for any questions or concerns related to this research, these are the contact information:

Name of the researcher: Ms. Banan Mukhalalati □ Position: PhD Student, University of Bath and Lecturer, College of Pharmacy, Qatar University. Email: banan.m@qu.edu.qa □

Name of the primary PhD supervisor: Dr. Andrea Taylor □ Assistant Professor, Director of Postgraduate Taught, College of Pharmacy, University of Bath □ Email: a.d.j.taylor@bath.ac.uk □

Name of the local PhD supervisor: Dr. Kerry Wilbur □ Assistant Professor & Director Doctor of Pharmacy Programme, College of Pharmacy, Qatar University □ Email: kwilbur@qu.edu.qa \_\_\_\_\_

I agree that the study named above has been explained to me and I agree to take part in it. I have read both the notes written above and the information leaflet about the study.

Your name:

Signature:

Date:

Researcher name: Banan Mukhalalati, August, 2014

### 1.7. Example of PIL



## **Examining the Implicit and Explicit Educational Theories in the PharmD Programme at Qatar University: A Case Study Participant Information Leaflet**

### **Research background:**

The Doctor of Pharmacy (PharmD) is a degree available in many countries in the world to qualify graduates for advanced clinical practice and patient care.

A PharmD programme has been recently designed and launched by Qatar University (QU), College of Pharmacy (CPH) to meet the advanced pharmacy practice needs of practitioners in Qatar. This college is the first and only pharmacy degree programme available in the State of Qatar and is the first accredited college of pharmacy accredited by the Canadian Council for Accreditation of Pharmacy Programmes (CCAPP) outside Canada. This research aims to uncover and examine the role of the explicit and implicit educational theories in the design and the implementation of the PharmD programme at Qatar University.

### **Research objectives:**

1. Identify the explicit and implicit education theories that influenced the design and implementation of the QU PharmD programme.
2. Explore and confirm any potential disconnect between education theories and education practice at QU PharmD programme.
3. Examine the implications of any disconnect on the curriculum, instruction and assessment in the QU PharmD programme, from an educational theory perspective, and ultimately on the student experience.
4. Describe how educational theories should influence and shape the curriculum, instruction and assessment of the QU PharmD programme and other PharmD programmes.
5. Provide recommendations on ways to enhance the role of educational theories in designing PharmD and other programmes.

**Research participants:**

There are a number of different groups who are participating in this study:

- PharmD students enrolled on the Qatar University (QU) PharmD programme.
- The QU PharmD programme designers.
- Faculty members who participate in training QU PharmD students.
- Preceptors who mentor the QU PharmD students at their advanced clinical internship sites.
- Pharmacy education scholars.
- CCAPP accreditation representatives.

**Your role in this research:**

If you agree to participate in this study, the researcher will be inviting you to a series of focus group meetings and or interviews that will run for around 60-90 minutes. At these meetings, you will be invited to share your opinions and experiences of the PharmD programme at QU, or more widely, in order to gain a rich picture of how this programme works and how education theory has informed its design and delivery. I will tape-record the meetings for the purpose of analysing our discussions – to ensure that all participants' views are captured accurately. Any such recording will be stored anonymously and on a password protected computer. They will be kept for 5 years and once the results are extracted and analysed, all these recordings will be discarded and erased.

We will be sending you a transcript of the interviews/focus groups at which you participated to ensure that they accurately reflect your perspective.

All data will be stored anonymously, treated confidentially and will be used for the PhD research purposes only.

**Risks and harms expected:**

No risk or harm is associated with you participating in this study. Your participation is voluntary and you are free to withdraw from the study at any time without any penalty.

**Anonymity and confidentiality:**

All the data will be stored in one of the following ways:

- As a softcopy, on a laptop that has a password, and only the researcher has the password and thus access to these data.
- As a hard copy in a locked cabinet, only the researcher has the key.
- After 5 years the data will be destroyed.
- The softcopies of transcripts and data analysis that will be shared with the researcher's supervisors will be deleted from their laptops after reviewing and commenting on them.

All participants' data will be stored anonymously using a code system. Despite the cohort being small, we believe that this step, and the non-sensitive nature of the data being collected will assist in maintaining participant anonymity.

When the work is written up, each case group participant will be assigned a unique identifier, which has two parts. The first part is a role descriptor. This is relevant to the research as the role of the respondent is key in developing the ideas in the case study and thus in the way the data is reported. Within this role descriptor, participants will be referred to by using a unique number identifier. Only the researcher will have the key to which respondent is which number.

However, given the small number of respondents and the unique roles held by some of the study participants (e.g. the accreditation agency president) the respondents will be identifiable (even if the role descriptor were not provided, the nature of the responses would make the respondent identifiable). In such cases, the research participant will be fully informed of this before being recruited to the study. The consent form will make it clear that they might be identifiable. The consent form will re-confirm this.

As a further step to protecting the rights of respondents, all participants will be sent transcripts of their interviews and invited to comment upon them and confirm their data. This provides a useful enhancement to the quality of the study and also provides a further opportunity for participants to review their data.

### **Right to refuse or leave the study:**

If you take part in this research, you have the right to leave the study at any time. However, your participation or withdrawal will not influence your ongoing selection

as a preceptor for PharmD students, your evaluation as a faculty member or programme designer, your score as a student, or your relationship with the college if you are a scholar or a representative of the accreditation agency. At this point the participants will be offered the choice to withdraw their previously collected data or maintain it.

**Access to results:**

The analysis will be shared with participants to confirm that it reflects their perspectives. The final results of the research will ultimately be shared with participants in the form of PhD research dissemination.

**Research data collection tools:**

In order to develop a clear picture that answers the research questions, we plan to collect views using a number of different approaches:

1. Focus groups for students, faculty and preceptors
2. Interviews with the programme designers.
3. Interviews with pharmacy education scholars.
4. Interview with CCAPP accreditation agency representatives.
5. Analysis for the key documents in the PharmD programme.
6. Diary recording by the researcher.

**Research outcomes:**

The research will facilitate a better understanding of the interplay between learning theories and the design of not only the PharmD programme at QU but also any professional academic programme, thus contributing to the debate about the role of educational theory in designing programmes generally. The study will utilise the findings and draw upon existing literature to offer practical recommendations about the effective use of theory to improve and enhance existing programme design more generally.

**Contact information:**

Should you wish to contact the researcher for any questions or concerns related to this research, these are the contact information:

Name of the researcher: Ms. Banan Mukhalalati

Position: PhD Student, University of Bath

Email: banan.m@qu.edu.qa

Name of the primary PhD supervisor: Dr. Andrea Taylor

Assistant Professor, Director of Postgraduate Taught, College of Pharmacy,  
University of Bath

Email: a.d.j.taylor@bath.ac.uk

Name of the local PhD supervisor: Dr. Kerry Wilbur

Assistant Professor & Director Doctor of Pharmacy Programme, College of  
Pharmacy, Qatar University

Email: kwilbur@qu.edu.qa

Researcher: Banan Mukhalalati, 2014

### *1.8. Example of topic guide for Stage Two*



## **Examining the Implicit and Explicit Educational Theories in the PharmD Programme at Qatar University: A Case Study**

### **Topic Guide for the interview with the Pharmacy Education Scholar (stage 2)**

1. Do you think that it is important for the PharmD programme to be based on educational theory? Elaborate?
2. Is there any disconnect between the education theory and practice? Elaborate-  
Probes:
  - How does education theory inform the design of learning that takes place in practice?
3. How do education theories influence the design and implementation of the PharmD programme?
4. The use of preceptors plays a big role in the programme. Is this based on an educational theory? Should preceptors know more about the educational theory that guides this particular part of the programme? Why or why not?
5. What is the role or influence of culture and situation in designing learning – how important does he think this is and what steps would he be taking to ensure this is addressed?
6. Please provide general recommendations about designing the PharmD programme based on educational theory and curricular framework?

Researcher name: Banan Mukhalalati, January, 2014



### *1.9. Example of topic guide for Stage Four*



## **Examining the Implicit and Explicit Educational Theories in the PharmD Programme at Qatar University: A Case Study**

### **Topic Guide for the interview with the CCAPP Administrator, based on CoP framework propositions (stage 4)**

E: Enablers:

E1: A co-development team is formed and given clear responsibilities to ensure a thoughtful planning and implementation process. The team demands participation of all CoP members such as: CoP consultant, a community coordinator, a leader, an exemplar, academics, a sponsor and a champion.

E5: Mutual trust, respect and open dialogue between participants, as well as individual contributions to decision making are important factors to create an open communication environment.

Q1: Describe your envision of the development approach of the PharmD programme in terms of the composition of team members, and development process.

Probes:

- Faculty involvement
- Practitioners involvement
- Consultant involvement
- Process involves cycles of: reflection, planning, benchmarking, execution, and feedback
- Trust, respect, open dialogue between participants and contributions to decision making

E4: Governmental drivers and accreditation standards should be well understood and applied for a successful CoP implementation.

E6: The developed CoP structure is guided by strategic objectives that are quantitative, qualitative, operational, aligned with the organisation's mission and suitable to the COP members' needs.

E7: Since the concept of practical placement is key to the development of CoP members, the time requirement for instruction during practical placement and the regulatory policies to support students' responsibility should be reconsidered to ensure that it is appropriate for achieving CoP operational objectives.

Q2: Describe how the design of a? PharmD programme should align with the strategic objectives, accreditation and professional body requirements and members' needs?

Probes:

- Governmental and accreditation standards should be well understood and applied
- Programme and learning objectives are aligned with student needs
- Gradual increase in student's responsibility
- Regulatory policy allows student mistakes?
- Strategic objectives are quantitative, qualitative, operational, aligned with the organisation's mission

CH: Challenges:

CH3: CoP implementation is more successful in societies with stronger social structures that grow in a sociocultural environment that signify groups, community, harmony, and collectivism.

CH4: The concept of CoP is usually effective in organisations that have less organisational hierarchies, so that individuals with similar professions and communication patterns solve problems, exchange ideas, and share knowledge.

CH6: It is important to keep a balance between the number of employees in an institution and the typical number of members in CoP to ensure the expected proximity between members.

CH7: This competitive environment in some organisations might lead to rigidity of competence, because individuals trust their own competence, which makes them reluctant to integrate practices and competences from other CoP members into their own individual practices.

Q3: Describe the nature and characteristics of organisations and societies in which CoP implementation is more successful? Or less successful?

Probes:

- Sociocultural environment that signify groups
- Organisational hierarchies
- Number of employees
- Competitive environment might lead to rigidity of competence

C: Curriculum:

C6: Practical placements in pharmacy provide an example of an integrated curriculum where fundamental science courses are merged within the context of pharmacy practice through the application of authentic practice-related experiences and provides opportunities for students to apply all parts of the curriculum in professional practice.

Q4: In what ways should the design of the practical placement be an example of an integrated curriculum (if this is the case)?

Probes:

- Integrated curriculum means that: all courses (classroom and placements) are

merged within the context of pharmacy practice and provide opportunities for students to apply all parts of the curriculum in professional practice to achieve clear learning outcomes

- Placement are appropriate in timing, nature and duration, sequence.
- Practical placement planning based on needs
- All courses in curriculum are integrated and linked to professional practice learning outcomes

C4: Compatibility between professional licensing, accrediting body requirements and course requirements for dual accreditation serves the learners' best interest.

C5: CoP theory encourages the integration of academics and practitioners, recognising the importance of the skills and knowledge in developing, a shared repertoire of resources, a range of theoretical frameworks, tools and a practice-based learning through a planned experiential work placement.

Q5: How could the PharmD programme ensure compatibility between licensing and accrediting body requirements and course requirements? As well as integration of academics and practitioners?

Probes:

- Compatibility serves the learners' best interest.
- Shared repertoire of resources
- A range of theoretical frameworks, tools and a practice-based learning

TS: Teaching Strategies:

TS1: Ensuring an appropriate learning environment is fundamental in CoP, such as: a healthy relationship between students, mentors and health professionals, the feeling of belonging, the gradual shift of participation from peripheral to central, and professional identity.

TS2: The students undergo different mentoring strategies that progress over time, as their competence develops, such as demonstration, modeling, coaching, scaffolding, fading, articulation, reflection and exploration. The aim of these strategies is to provide the students with planned support that is based on students' active engagement in their learning.

TS6: Mentors should understand the concept of cognitive apprenticeship where students are considered as additional members in the practice site during their practical placement period until they gain competence, and that cognitive apprenticeship is the foundation of the other teaching strategies.

Q6: Describe the preparation/support/training that should be provided for mentors to help them adopt a range of mentoring strategies? How those should be planned to ensure that students have a feeling of belonging and professional identity?

Probes:

- Mentoring strategies are: demonstration, modeling, coaching, fading, reflection, shadowing and peer support.
- Strategies are changed depending on stage of development of the students competence and confidence

- Those mentoring strategies are related to students' experience and competence
- Mentoring strategies are based on students' active engagement in their learning.
- Mentors shadow the academic faculty and academic faculty shadow practitioners.
- Peer support reinforces the social nature of the learning.

A: Assessment:

A2: Assessment tools are valid and reliable and are appropriate for use in progress decisions.

A5: Assessment activities are well-planned, proactive, measured on a regular basis to ensure accountability and policy orientation so that they align with the professional bodies' requirements.

A7: The assessment system is frequently compared and contrasted to best practices and new approaches in assessment that have been tested and applied.

A8: There is a quality mechanism to moderate assessors' assessment of student assignments in order to ensure a rigorous assessment as well as consistency across practice bases.

Q7: Describe your vision of a quality system designed to ensure that the assessment activities and tools are authentic to real life practice, valid, reliable, consistent; as well as aligned to best practice approaches and professional bodies' requirements?

Probes:

- Accountability and policy orientation
- Moderation of assessor's assessment
- Consistency of tools and system
- Quality system to monitor assessment by university
- Compared to new approaches in assessment that have been tested and applied.

### 1.10. External research confidentiality agreement



#### **Examining the Implicit and Explicit Educational Theories in the PharmD Programme at Qatar University: A Case Study**

##### **RESEARCH ASSISTANT CONFIDENTIALITY AGREEMENT**

I, **Rama Abdullatif**, agree to assist the primary investigator with this study by conducting focus groups for students and for faculty liaisons. I agree to maintain full confidentiality when performing these tasks.

Specifically, I agree to:

1. keep all research information shared with me confidential by not discussing or sharing the information in any form or format with anyone other than the primary investigator;
2. hold in strictest confidence the identification of any individual that may be revealed during the course of performing the research tasks;
3. not make copies of any raw data in any form or format, unless specifically requested to do so by the primary investigator;
4. keep all raw data that contains identifying information in any form or format secure while it is in my possession.
5. give, all raw data in any form or format to the primary investigator when I have completed the research tasks;
6. destroy all research information in any form or format that is not returnable to the primary investigator upon completion of the research tasks.

Printed name of research assistant: **Rama Abdullatif**  
Address: **Qatar University, External Relation Department**  
Telephone number: **55689047**  
Signature of research assistant  
Date: **19-4-2015**

A handwritten signature in blue ink, corresponding to the name Rama Abdullatif.

Printed name of primary investigator: **Banan Mukhalalati**  
Signature of primary investigator:  
Date: **19-4-2015**

A handwritten signature in blue ink, corresponding to the name Banan Mukhalalati.

Researcher name: **Banan Mukhalalati, December, 2014**

## 2. Appendices related to literature review

### *2.1. Search term for stage three*

PubMed:

("Community of practice" OR "communities of practice") AND ("education" OR "Placement")

ERIC (EBSCOhost platform):

("Community of practice" OR "communities of practice") AND ("health education" OR "health care education" OR "healthcare education" OR "Placement")

### *2.2. Other search terms for literature review*

Web of Science:

"communities of practice" and ( college or university or "higher education")

+

"health education" or "health care education"

"communities of practice" AND pharmac\*

PubMed:

((("Health education" OR "health care education") AND (college or university or "higher education")) and "communities of practice"

((("communities of practice" AND (education or placement))) and "health care")

("communities of practice") AND ((("healthcare education" OR "health education"))

("communities of practice" OR "community of practice") AND pharmacy

((healthcare" OR "health") AND ("communities of practice" and (education or placement))

Scopus:

("communities of practice" AND (college or university OR "higher education")) AND ("health education" OR "healthcare education")

"communities of practice" AND pharmac\*

“communities of practice” AND (education OR placement) AND ( “healthcare” or health)

ERIC (EBSCOhost platform):

(“communities of practice” AND (college or university OR “higher education”) AND (“health education” OR “healthcare education”)

### 2.3. Example of review matrix of Stage Three

Review matrix:

No.	Name of article	Year	Name of author/s	Name of journal	Description	Summary of points of interest
1	Interdisciplinary integration in medical education: theory and method.	1982	Benor, D.	Medical Education, 16(6), pp. 355-361.	The concept of integration of the medical curriculum is analyzed in this article	This article is used as a reference for horizontal and vertical integration, it is not meant to be related to CoP directly  The conclusion is that there is no 'right' and 'wrong' way to integrate subject matter; each medical school may select a method appropriate for its goals, structure and constraints.
2	Learning to nurse through legitimate peripheral participation	1998	Spouse, J.	Nurse Education Today, 18(5), pp. 345-351.	Talks about mentorship to take students from peripheral participation to active member	They use the word sponsorship instead of mentorship for someone who helps a student navigate from peripheral to legitimate participation.  Students success and competence is affected by sponsorship from sponsor and type practice  To be successful, learning requires collaborative engagement between student and practitioner.  Clinical practitioners need ongoing education to develop the necessary knowledge and skills to be effective practitioners and supervisors.  The concept of legitimate peripheral participation provides a useful framework to review the relationship between learner and clinical practitioner and professional development.
3	Situated learning in the practice placement	2000	Cope, P., Cuthbertson, P. & Stoddart, B.	Journal of Advanced Nursing, 2000, 31(4), 850-856	This study examines students' perceptions of placement experiences of students  Social and professional acceptance	Social acceptance which might be extended to any student and a professional acceptance which relies on the display of appropriate competence.  Central importance of the placement for training nurses, explicit use of mentoring techniques derived from situated learning and cognitive apprenticeship



	A community of practice:		Cradlock, D., Doucet, S., Hammick, M., Mpofu, R., O'Halloran, C. & Pitt, R.,		collaboration: a community of practice (CoP) that aims to build theoretical rigor in IPECP.  It explains why the network is viewed as a CoP and lays out the way forward for the community based on the principles for developing a CoP outlined by Wenger, McDermott, and Snyder (2002).	improve theoretical awareness and rigor and hence the quality of curriculum development, research and collaboration  The IN-2-THEORY community holds to seven principles of developing a CoP (Wenger et al., 2002): design for evolution; open a dialog between inside and outside perspectives; invite different levels of participation; develop both public and private community spaces; focus on value, combine familiarity and excitement and create a rhythm for the community.
38	Communities of practice, a phenomenon to explain student development in community nursing	2013	Lynn Sayer	Primary Health Care Research & Development page 1 of 11-2013	This paper analyses the concepts of situated learning and communities of practice as an underpinning theoretical framework to understand the professional education of community nurses in practice settings. The paper also highlights the strengths and limitations of the community of practice theory as applied to professional education.	This study found the essential element within communities of practice to be relationships There is a need a good relationship with other members of the community of practice and practice teachers saw themselves as central to facilitating this  Learning occurred for all members of the community of practice through reciprocal relationships.  Within communities of practice with a foregrounded learning dimension, learning becomes a reason for participation in social practice rather than a by-product
39	Communities of practice, a phenomenon to explain student development in community nursing	2014	Sayer, L.,	Primary health care research & development, 15(04), pp.430-440.	The paper extends Lave and Wenger's community of practice phenomenon and identifies how communities are (re)produced over time.	CoP enable individuals to learn and develop their practice and their identities through mutual engagement in the practice of the community.  through interaction and it is the interaction between students and practice teachers who are open to change that the sought for transformation could emerge.  Trust and respect are viewed as crucial to the effectiveness of the

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						community of practice as a social learning system,  there is a need for a good relationship with other members of the community of practice and practice teachers saw themselves as central to facilitating this  CoP as an approach allow the profession itself to (re)produce in a way that supports continuity but also promotes changes in practice.
40	The Meaning of a Healthcare Community of Practice	2014	Susan Seibert	Nursing Forum Volume 44, No. 4, pp. 1-4 2014	This study identifies the contextual definitions, critical attributes, antecedents, and consequences of the community of practice phenomena in health care.  This analysis informed the decision to use a healthcare community of practice framework for an interprofessional dedicated education unit.	As explained in the healthcare literature, antecedents to community involve the initiative, interpersonal skills, and work ethic of the community members. Consequences of the CoP phenomenon range from immediate personal outcomes for the community members to improvements in organizational performance.  Improved expertise, efficiency, and knowledge immediately reap benefits for the community members as they work in the practice environment.
41	Implementing a Virtual Community of Practice for Family Physician Training: A Mixed-Methods Case Study	2014	Barnett, S., Jones, S.C., Caton, T., Iverson, D., Bennett, S. & Robinson, L.,	J Med Internet Res. Mar 2014; 16(3): e83.	The goal of the was to review the usefulness of a 7-step framework for implementing a VCoP for general practitioner (GP) training and then evaluated the usefulness of the resulting VCoP in facilitating knowledge sharing and reducing professional isolation.	The steps in this framework are (1) organizing facilitation, (2) finding a champion and supporters, (3) establishing goals, (4) having a "broad church" of users, (5) ensuring a supportive environment, (6) providing benchmarking and feedback, and (7) considering technology and community factors that promote usage.  Regular feedback to the participants from the main facilitator was vital in encouraging site usage.  Communities are more likely to share knowledge when there is a mixture of online and face-to-face meetings, members self-select, and both passive and active users are encouraged

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42	Integrating Science and Practice in Pharmacy Curricula	2014	Husband, A.K., Todd, A. & Fulton, J.,	American Journal of Pharmaceutical Education, 78(3), pp. 1-8	<p>This paper discusses the development of an integrated curriculum in which students are presented with an organized, logical sequence of material, but still challenged to make their own integrations and develop as integrative thinkers. An evidence-based model upon which an interdisciplinary undergraduate pharmacy curriculum can be built is presented.</p>	<p>The integration of science and practice curricula within pharmacy is of relevance to educators throughout the world in producing graduates who are capable of applying A broad knowledge base to solve complex problems.</p> <p>Integration takes place within the student's mind. Thus, consideration of what makes sense to different people is an essential component of working towards integration.<sup>4</sup> Educators must ensure that the curriculum allows sufficient flexibility for students to become integrative thinkers and not simply accept the integrations made by others.</p> <p>There are several conceptual frameworks that help to identify the extent of integration or ordering the sequence of material within a curriculum. Integration can be conceptualized as a continuum from completely separate discipline teaching at one end to a fully integrated teaching at the other.</p> <p>Horizontal and vertical integration, terms which appear regularly in curriculum-planning discussions, outline the direction of integration as described by Benor</p> <p>Organizational themes allow learners to make sense of the information provided and should avoid the pitfall of students being expected to accept the integrative views of others.</p> <p>There are many ways to approaches to curriculum integration and significant amounts of educational and psychological theory to support various curriculum strategies.</p> <p>The curriculum should be considered as a whole And disaggregated into smaller sections rather than being the result of accumulation of separate modules</p>
43	There's more unites us than divides	2015	Wendy Mayne , Nicola	Journal of Further and Higher	In 2010, a Scottish nursing community of practice (CoP), was formed to bring	Discussed the problem of underrepresented group in education and why CoP can solve this problem

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	us! A further and higher education community of practice in nursing		Andrewa , Carol Druryb , Irene Egane , Anne Leitchd & Marion Malonee	Education, 2015 39(2), pp.163-179	<p>together academics from further and higher education, initially for a period of six months. The CoP focused on exploration of current practice, particularly transition, articulation and the first-year experience in tertiary education.</p> <p>In this article the nature and focus of the CoP is described, activities within the community are explained and the findings explored in the context of local and national collaborative working and participative learning.</p>	<p>The work shadowing activity within this CoP provided an opportunity to participate in and observe subject content and delivery and engage in discussion and exchange ideas. Curriculum delivery focuses upon pedagogies including student-directed or problem-based learning and lecturer-led sessions.</p> <p>Shift in educational paradigm from teaching-centred to learner-centred CoP is sustained by individual motivation as well as institutional and governmental drivers</p> <p>Areas of focus included:</p> <ul style="list-style-type: none"> <li>• Work shadowing – sharing practice through experience.</li> <li>• Curriculum alignment – consideration of components of course.</li> <li>• Assessment methods – comparing approaches and rationale.</li> <li>• Teaching and learning – methods of delivery, using feedback and so on.</li> </ul> <p>The members of the community communicated fluently and openly. There was a feeling of mutual trust and respect among the members, and participation in decision making was equal.</p>
44	Integrating components of culture in curriculum planning.	2016	Offorma, G.C.,	International Journal of Curriculum and Instruction, 8(1), pp. 1-8.	In this paper, the key concepts of curriculum, culture, and curriculum planning are explained. The components of culture, namely, universals of culture, specialties of culture and alternatives of culture are discussed. Integration is briefly presented and how to integrate culture in the curriculum planning is discussed. This can be done through	<p>I used this article to provide one of the definitions of curriculum as:</p> <p>There exist different definitions of curriculum. The definitions are according to the different conceptions of education and the functions of school and types of the school products.</p> <p>Curriculum can be defined as the document, plan or blue print for instructional guidance which is used for teaching and learning to bring about positive and desirable learner behaviour</p>

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### 3. Extract of an unanalysed transcript

#### **14 AY, P1, 1**

##### **Researcher:**

Hi. I hope that I will not take a long time of your time. I sent you this morning a topic guide and a consent form or information leaflet. I am sure that you did not get the opportunity to go through them yet. But you can do that at your convenience and if you have any question, I am very happy to answer it later. Just a little background about my PhD research, it is about the relationship between the PharmD programme at Qatar University and the education theory, the explicit and implicit education theory in the design of the programme. So I am conducting several stages in my research. This is stage number two, and if you don't mind I will need an interview in this stage and also in subsequent stages at your convenience.

##### **S2, P4, Interview, 2014:**

Yes. That is good.

##### **Researcher:**

Ok. My first question to you is: Do you think that it is important for the PharmD programme to be based on learning theory. I know that you are a Dean in your university and you have been seeing a lot of PharmD programmes during the accreditation process. So do you think that it is important to have the PharmD programme based on learning theory?

##### **S2, P4, Interview, 2014:**

I guess you mean by the learning theory a kind of technique or model that could be used throughout the programme?

##### **Researcher:**

Yes.

##### **S2, P4, Interview, 2014:**

So I think it is very important that there is kind of similar trail work around the programme, so that the professors will not change from course to course how things are done, because for students it becomes difficult to adapt each time for a different technique or theory. So we strongly believe that there is room for different types of techniques, so that the same programme with similar activities should have similar techniques. With hat the students know what to expect and can concentrate on the knowledge, skills and competencies that have to be developed rather than on adapting to different modes of teaching every time.

**Researcher:**

Ok, Could you elaborate from your experience as an administrator in your university? What kind of framework or theory has the university used?

**S2, P4, Interview, 2014:**

So basically we used a kind of a backbone. We lay down some guiding principles before we develop our PharmD and one of them was to engage the students in active learning, so that means that the student have to do a lot of learning by themselves and professors acts more like coaches rather than standing in front of a class to deliver the materials. So students can peer teach, teach between themselves, understand and then come to see the professor to resolve some issues. And then in our model the professor will give a summary lecture, then close to the examination students can ask questions and difficult concepts can be re-explained to make sure that students are progressing properly. So basically that is the guidance we choose: it is called the guidance discovery. Although it is implemented throughout all of our more theoretical courses, but of course skill labs are very different where students practice what they learned in different context by role playing and by stimulations, not with manikins, but with their colleagues while supervised by pharmacists. So that is something we do as well, and then we have practice check, where students do check in community, and finally we have the practice experience where students go in pharmacies or in hospital pharmacies to further develop their competencies. So there are a variety of techniques but they are quite homogenous. The type of knowledge determines the type of teaching techniques. For me; there are 4 types of knowledge, as you may know. There are facts, there are concepts, there are procedures, and there are principles. So all those types are taught the same way then you have skills taught in labs then you have the attitudes that are developed mostly in the practice experience. So basically we can cover all aspects of competency development with different techniques.

**Researcher:**

Ok, thank you very much. I want to ask you, based on your experience when you were looking at different colleges and particularly I am considered about QU PharmD programme: Do you think that there is any kind of disconnect between the education theory and the education practice. You talked about what seems to me as a good model, there is a kind of adoption of one model across a programme in your university, but based on your experience or general impression about different universities, especially the PharmD programme at QU, is there any disconnect between theory and practice?

**S2, P4, Interview, 2014:**

Well, the biggest problem for me in most of programmes that I reviewed, and of course I am biased because we believe the techniques we use are quite good to educate other pharmacy school, is the radical fact that that the students are very passive, which mean that the professor goes to the literature, prepares everything and deliverers PowerPoint presentation to the students, so the students does not go

through all that literature, he takes what a professor can provide and that is set. So the theory is really focusing on the teachers' ability to find, summarise and deliver the content well. The students are not really playing an active role. Then skill labs are different where students are now asked to play an active role supervised by professor or pharmacist and these labs are very important but the amount of lab courses vary a lot between programmes. And I think something that we did not talk about is the role of assessment. So with theoretical courses if you test facts or concepts, procedures, which is knowledge then it is quite straight forward, you can use multiple choice questions or open questions, so not very different. But when you do some skills teaching and assessment then the assessment has to be also tailored to the type of material the students are doing. For instance, for skill labs, OSCE ways of exams are good to show the professors or tutors how they did integrate everything and that they are competent in doing certain tasks. We think that the very protected environment, which is university, before going to clerkships. This is often mixed up. I think there have concordant between the type of material, the type of technique used to deliver it and then the type of technique used to assess it, so that it is like a continuum, and most of the time, I would say, things are maybe not optimum in the assessment part, where we rely, I would say, on usual or comfortable testing model that may not be well aligned with what is being taught or the type of material being taught.

**Researcher:**

Yes...

S2, P4, Interview, 2014:

Do you understand what I mean?

**Researcher:**

Yes, Yes. Absolutely and you know you raised a very important point about the assessment that brings me to question three. Now specifically for the PharmD programme model, that is in our university, which is a post graduate model for one year that is mainly based on internships in the training sites and you talked about the assessments and for me I consider as you mentioned also that the education has three components: curriculum, instruction and assessment. So if we look at these 3 components and looked at the PharmD programme that is in our model, how do you think that the educational theory should influence this model? We do not have lectures and we have only one course every other week for half day and the remaining courses are practical placements, where students are on the sites.

**S2, P4, Interview, 2014:**

Students are on sites. It depends on the types of learning objectives and the type of knowledge that is being developed. For instance, we used clerkships as the best place to develop competencies, which is a complex task that brings together the skills, the behaviour, the attitudes and for the student to resolve some clinical issue with real life patient. So in this setting again, assessment must be different than it would be in a course that is fact orientated or knowledge oriented. So for the clerkships or for the

rotations, it is important that the preceptors are looking at these competencies where the students have to really align together all the resources to solve real life problems. So I believe again there has to be close guide between the type of material, if you want, and the experience the student is doing and the assessment that they are going through. For instance assessing a clerkship experience with multiple-choice questions might be not the best way to capture if students really have been able to develop their competencies and become competent pharmacists. Okay. So is that clear?

### **Researcher:**

Yes it is absolutely clear and you mentioned here about the preceptors. The use of preceptors is very important and they have a big role in the PharmD programme. Do you think that this is based on learning theory and do you think that the preceptors should know more about learning theories to help them to teach the students or that it is enough to have faculty members, who observe the educational process that happens between students and preceptors, know about these theories?

### **S2, P4, Interview, 2014:**

Well, I think the preceptors have to be trained, as they should bring additional knowledge, although it may happen that preceptors learn from students while they are in rotations more stuff. Sometimes, students know more in theory than the preceptors, so for us the clerkship is really an area where students gain experience on how to use this knowledge, how to use these skills, and how they should behave in front of a patient. We want our preceptors to capture that and see if the students are competent because they can use all these dimensions to solve the problem in appropriate fashion. So for us the training of our preceptor is retraining on how to evaluate the competencies within a real life situation because that is the thing we need them to add to the other evaluations we already have. We can use the stimulations; we can use the OSCE, not in real life patient, but in actors or whatever. Again those are controlled and easy to do but the preceptors are out there, with their different personalities. They are not found to be teachers, but we are keen to fostering the development of student, so for us we make sure that they can ascertain that the student is really reaching a level of competency of what is expected whether in first year, second year or last year. With that, student can function and demonstrate competencies at the expected level, so we have to train preceptors and we have to provide them with guiding and direct observation booklets, so that the preceptor can evaluate the competencies while students are doing specific actions. So you need to give tools to the preceptors, so that they give you other input than what you are actually measure yourself. For instance, if student went into internship and you ask the preceptor to evaluate or assess the student on knowledge, then I think you are missing the point, because knowledge should already been tested within the university, and what is more complicated is solving the real problem using all available resources. So, basically the college should teach or train preceptors to know how to evaluate competencies, which are the things that should be developed during the clerkships.

**Researcher:**

Yes, I totally agree. I want to ask you, when QU PharmD programme was designed, it was based as you know on the experience of the founding Dean and the experience of the PharmD director and they got their experience through their long working in Canada. At that time they did not explicitly observe learning theories such as experiential education or situated learning or communities of practice or any of the theories. They adopted a model that is implemented in Canada and in the North America generally and they did not explicitly focus on the theory to understand it more and to make it fit their situation, this is based on design document and meetings and interviews with the designers. Do you think that originally when the model of making the students go through the internship, the way that is taking place in the PharmD programme here or in Canada or before in USA, was originally based on a learning theory? From where the idea of sending the students in to the rotations to spend time in a work base training came? Do you think that this was originally based on educational theories or it was just something to follow other professions, for example?

**S2, P4, Interview, 2014:**

That is a good point. Actually, I don't know where it came from because I have been a dean since 9 years now, and I know that in Canada and even across the world not a lot of things are evolved in terms of pharmacy education. Still we are doing very much what we were doing 50 years ago. We just changing the topics or the courses .....

## 4. Appendices related to data analysis

### 4.1. Extract of analysed transcript by colour-coding in Stage Two

The PharmD programme when it was first designed back in around 2010; it was designed as a hybrid of American, Canadian, and little bit of Lebanese programmes. So generally it was intended to be a little bit of mix between where Canada is now, where Canada is heading, where USA has gone, and where Lebanon is going likely to go. So in the similar fashion in using these three programmes as key programmes for the design of the undergraduate programme at QU, the same general intent was applied to the PharmD programme.

#### Researcher:

Ok. I am sure that the Canadian experience was very important in designing the programme and the Canadian accreditation. Can you elaborate on the influence of your background as Canadian, and coming from Canadian school and the effect of the accreditation?

#### S2, P3, Interview, 2014:

In Canada, the PharmD programme began in 1991 in the University of British Columbia, when I was fortunate to be a faculty member and one of the founding members of the division of clinical pharmacy that launched the programme in the faculty of pharmaceutical sciences. It is a 2 years programme post BSc like the one in the QU. The experience I had over the subsequent 20 plus years in that programme definitely had an impact in my impression of how we should design the programme at QU. An important element is the fact that the PharmD programme in Canada is in transition phase and it is transitioning from 2 year post BSc and post residency into 6 years entry to practice degree, which mimics the American experience, with the residency flipped in to the end of the degree programme instead of being between the BSc and PharmD degrees. So I recognized at the time of the initial design the fact that by the time we have our first graduates, Canada would likely to be dealing with 2 types of programmes: the new 6 years entry to practice programme, which they are keen to making the transition towards, and the existing 2 years post BSc programme. So part of the design was trying to account for both of those elements in the design of QU programmes.

#### Researcher:

Ok, thanks. My second question is about designing this programme for Qatar. How do think the programme was particularly designed for Qatar, by taking in consideration Qatar needs? Did the design take in consideration the Qatari culture and environment, or not? If yes, how was this taken in consideration?

#### S2, P3, Interview, 2014:

That is a good question. For the BSc and PharmD programs, it took me a while till I realized and figured out that you cant just transplant a programme from one country to another country and expect it to work. We had to take some of the basic elements of the American, Canadian, Lebanese programmes and focus on the Canadian one, take some basic elements and use those as framework for the design of the new programme. But the new PharmD programme at QU had to reflect a smooth transition from the BSc programme for starters and, as you said, it had to meet the needs of the country and its citizens. As you know the needs of the citizens in Qatar are not really different from the needs of any people in

Banan 5/21/2014 1:21 PM

**Comment [1]:** Other educational programmes: The PharmD programme when it is first designed back in around 2010 was designed as a hybrid of American and Canadian, little bit of Lebanese programmes.

Banan 5/21/2014 12:07 PM

**Comment [2]:** Same fashion of designing the BSc programme: So in the similar fashion in using these three as key programmes for the design of the undergraduate programme at QU, the same general intent was applied to the PharmD programme

Banan 8/23/2014 11:05 PM

**Comment [3]:** Personal experience: and the experience I had over the subsequent 20 plus years in that programme definitely had an impact in my impression of how we should design the programme at qu

Banan 5/21/2014 12:10 PM

**Comment [4]:** The transition of the PharmD in Canada: an important element is the fact that the PharmD programme in Canada is in transition phase and it is transitioning from 2 year post BSc and post residency to 6 years entry to practice degree in which mimics the American experience with the residency flipped in to the end of the degree programme

Banan 5/21/2014 12:16 PM

**Comment [5]:** Transplantation doesn't work, rather benefit from different programmes: you cant just transplant a programme from one country to another country and expect it to work, we had to take some of the basic elements of the American, Canadian, Lebanese programmes and focus in the Canadian one



any country in the world. Qataris and citizens in Qatar have the right to get good health care like any country in the world. And I am a firm believer that Qatar can do it, as well, and even better than most countries, when they put their mind to it. The status of pharmacy in Qatar at the time that both degree programmes were launched was variable. There was a batch of excellence, which means that there was a group of people who are doing excellent job. Also, there was another batch that practiced pharmacy behind the standards that I was familiar with in Canada. So one of the goals of the PharmD programme in Qatar, similar to what had to face when we started PharmD in Canada back in early 90s, was to use the PharmD programme as a tool for transition of pharmacy practice from distribution role to active responsible bedside clinician role. The BSc programme was the first step in this two steps process and the PharmD was the 2<sup>nd</sup> step. There was obviously a need for advanced practitioners role in the country beyond the one that existed. And same importantly, a need for role models who could help future students progress towards a higher level of practice. I considered that the design of a PharmD programme, similar to Canada, a way to train young graduates, who will ultimately become seasoned practitioners to be also role model for future generations. So the programme was designed to meet the accreditation requirement for CCAPP, we wanted to ensure that the programme is accredited like the BSc, but also can meet the needs of the country and its healthcare system overall, not just pharmacy. Also, we wanted to ensure that during the overall maturation process in the country, pharmacy is not left behind. One of my greatest fear was that the pharmacy as discipline will not be ready on board in improving the healthcare bus, if you call it like that in Qatar, and in advancing with other professions. So the PharmD programme had another role, to prepare its graduates for the national health strategy, which was just launched and to ensure that the pharmacy had a very active role in ensuring that the goal of that strategy are met. The other element of the PharmD programme that you are familiar with is to plant graduates from PharmD programme amongst pharmacist working particularly in the institutional settings to act as mentors and examples for other pharmacists who are already in practice in country. So they act as ambassadors in order to sparkle interest in them either to pursue an advanced degree like part time PharmD programme, or perhaps Board certification, or at least active participation in continuing professional pharmacy education. So, with that the entire pharmacy body collaboratively could advance as oppose to the few that graduate from the college. So all of those were kept in mind when the programme is designed, as we talked about in the past. We had some decisions to make, Do we need an entry to practice degree or BSc? A question that was often asked. I look back now, as I have been away from the programme for couple of years, and I often ask myself: Was it the right decision to proceed with the BSc programme followed by PharmD programme? or shall it be an entry to practice PharmD programme? The answer to that now has not changed. It was the right thing to do, and I think ultimately that the staging process better prepared smaller numbers of PharmD graduates. At the same time allowed a good number of BSc graduates with good training to enter the market place in Qatar. I think that we all agree that it is good for Qatar to have a good mass of well trained graduates providing care not only in institutional setting, but also in community setting, I hope that this answers your question.

#### Researcher:

Yes it did. But I just have a small follow up question to the same question. So do you think that, for example, the Qatari culture impacted teaching and learning in the PharmD programme as planned or as

Banan 5/21/2014 12:18 PM

**Comment [6]:** The programme had to meet the needs of citizens and residents in Qatar that is not different than other needs: had to meet the needs of the country and its citizens and you know at the needs of the citizens in Qatar, they are not really different from the needs of any people in any country in the world and Qatari and citizens in Qatar have the right to call any healthcare like any country in the world

Banan 5/21/2014 1:31 PM

**Comment [7]:** The pharmacy was behind the standards in Canada. Like what happened in Canada pharmacy profession need transition from distribution to clinical through 2 steps: BSc and then PharmD: so one of the goals of the PharmD in Qatar similar to what had to face when we started PharmD in Canada back in early 90s was to use it as a tool for transition pharmacy from distributional role to active responsible bedside clinician role and the Bsc was the first step in this two steps process and the PharmD was the 2<sup>nd</sup> step

Banan 8/23/2014 3:05 AM

**Comment [8]:** It was important that the programme gets accredited like the BSc: so the programme was designed to meet the accreditation requirement for CCAPP we wanted to ensure that the programme is accredited like was the BSc

Banan 5/21/2014 12:26 PM

**Comment [9]:** Making sure that the pharmacy profession is not left behind in applying the health strategy: one of my greatest fear was that would be that pharmacy as discipline will not be ready for basically on board the improving the healthcare bus if you call it like that in Qatar and advancing on with other professions so the PharmD has another role to prepare its graduate for the national health strategy which was just to be launched and to ensure that the pharmacy had a very active role in ensuring that the goal of that strategy were met

Banan 5/21/2014 1:27 PM

**Comment [10]:** Right decision: BSc then PharmD so that graduates provide care not only at institutional level, but also community level: I have been away from the programme for couple of years and often ask myself was it the right decision to proceed with the Bsc followed by PharmD programme or shall it be entry to practice PharmD programme and the answer to that now hasn't changed

designed? Would the design for this particular culture be different than if it was designed for another country?

#### S2, P3, Interview, 2014:

This is a good question. I can only give you an empirical answer because we never explicitly evaluated that. Let me come up with this question with few different ways. I don't think that Qatar was necessarily ready for a pharmacy programme when we started. I remember the challenges that we had from a variety of locations wondering why would we spend 5 years training somebody to be a grocery storage ended. I remember this was a common analogy made. So I think that going back to 2006 period, we had a challenge in our hands which was to inform Qatar what pharmacy as an academic and clinical profession is, and what pharmacist can do to improve health outcome, and what the college will do to graduate component providers who will contribute to healthcare in the country. Qatar has different culture than Canada. I guess there are differences, but at the same time there are similarities. I don't think, as an example, that there is any difference between Canada and its mix of religions and Qatar and its predominantly Muslim religion in terms of implication on the desire of good healthcare. I don't think religion facts in to it. I think religion is a motivation to the students as we saw over the years. Students were very motivated, and the key for this motivation was to make them proud of the discipline that they were about to enter. I think this was a big motivation. I think from a competitiveness of the students point of view, I mean thinking of the culture from students perspectives, I think that the students in Qatar are more competitive than they are in Canada, and I think they strive for excellence as much or more than in Canada. Part of this is their background, and the desire to posses a degree in healthcare profession, which in some cases is higher than what I saw in Canada before I left. I think the desire of the parents of the students in Qatar are the same as in Canada, in terms of the desire to see their offspring thrive and secure a good living, so that they can lead a happy productive life. This is not any different. I think there are similarities more than difference. I don't believe that going back to religion, I don't think that there is a different between the Christian religion and the Muslim religion or any other religion in terms of a desire to care for and take care of your fellow man, which pharmacy is all about. So I don't think that there is a one major difference, and I don't think that the hospital setting was that much different, and I don't think that the overall culture resulted in any major change in the study plan or structure that we had to accommodate. Of course we had to accommodate differences perhaps in opinion. Also, differences in emphasis might be slightly different in the programme, because we are introducing a new advanced degree in the country. The first thing was to get the programme in place, and graduate students who meet minimum requirement for the degree accreditation. And I think our students did more than that. Then, once you have it in place, have it grow, reevaluate the programme, and determine whether there is enough emphasis on certain things that may have not been there in the initial iteration, and be prepared to change. This what makes the programme go stronger, but again coming back to your question, I don't think that there was anything substantially different in Qatar culture that influenced the general pedagogical design of the programme.

Banan 8/23/2014 4:13 AM

**Comment [11]:** Qatar was not ready for the pharmacy programme. I don't think that Qatar was necessarily ready for pharmacy programme when we started. I remember the challenges we had from a variety of locations wondering why would we spend 5 years training somebody to be glorified grocery storage ended

Banan 8/23/2014 4:13 AM

**Comment [12]:** Qatar culture and Muslim religion didn't influence the students or parents motivation to study pharmacy, no difference then Canada. In fact even competition in Qatar is higher. I don't think as an example there is any difference between Canada and its mix of religions and Qatar and its predominantly muslim religion in terms of implication of desire of good healthcare. I don't think religious fact in to it, I think religion is motivation to the students as we saw over the years. Students are very motivated and the key there was to make them proud of the discipline that they are about to enter. I think this was a big motivation

introduced two streams at the same time. As you know, the additional workload that came with that was substantial, but I think that the important message in that is: The CPH in QU is not a leading organization that is going to train in its own students only, and does not have any obligation to the practicing body. The fact of the free continuous pharmacy professional education for several years record and other activities is a reflection of our commitment to the practicing body in the country. I think that this is an important message that we set. I would not change that, but I would preserve the structure as it stands. But I would pursue a model that emulates the USA and Canadian ones in order to provide specialty residency to graduates of PharmD programme post PharmD programme with the intension of taking generic PharmD, and then give them the opportunity to pursue more, specially focus such as nephrology or infectious diseases. And I would almost in parallel but in more sequential fashion design and implement fellowship programmes, in order to admit PharmD programme graduates with residency who have an amplitude and desire to do research in their chosen area of specialty. If we get back to that question, and I think that I heard that the college is planning to expand its master programme to include a master in clinical pharmacy, and I am fine with that. I guess that the difficulty you have with this programme, unfortunately, is that it means extracting the PharmD from practice. If you are going to meet some of the university expectations, which are not off campus students based, they are more on campus student based, you know they are more bench researched based. However, I am not against master by any means. It doesn't matter what you call it, they all are education, but what I have seen and what I have been involved in the residency fellowship model is a way that really fast track training of the clinically oriented graduates. W did not get the residency programme before I left, but I would still like to see a residency programme in place that have two components: general residency for those with BSc only and specialized residency for those who posses PharmD and want to pursue a specialty. You need a critical mass of preceptors to allow that to happen and it was too early to introduce specialty residency before I left, but Qatar needs to plan for that. I think that if they have a healthy two prone residency programme, with a general and specialty focus, and the special focus could be anything. I have examples in nephrology and infectious diseases, but it could be easily cardiology or pediatrics or oby/gyn. That what I think is the sort of the next steps in terms of expanding structure of existing educational opportunity for students in the pharmacy discipline, and this will always be meeting and continuing to meet the goals for Qatar.

#### Researcher:

Thank you very much Dr Peter for your comprehensive answers. I learnt a lot from this interview, and I appreciate the time that you gave it to. I am planning to conduct another interview with you in May or June. I hope that you will be available by that time.

#### S2, P3, Interview, 2014:

I will be happy.

#### Researcher:

Ok. Do you have any question or comment?

#### S2, P3, Interview, 2014:

Banan 5/21/2014 1:04 PM

**Comment [18]:** The CPPD programme that the college is running is an important message about its commitment to the pharmacy profession in Qatar.

Banan 5/21/2014 1:07 PM

**Comment [19]:** I don't think I would change anything in the design of the programme if I go back now.

Banan 5/21/2014 1:08 PM

**Comment [20]:** The future focus should be in the residency and fellowship

4.2. Extract of analysed transcript by NVIVO in Stage Four

15 AY, S, FG

Researcher:

Good afternoon. Did you read the Participant Information Leaflet (PIL). Are you familiar with it? Do you agree to participate in this study? So if it is OK, please sign the consent form, in order to confirm that you are in.

My name is X, I am a pharmacist, who work as research assistant to the PhD research that you have details about it in the PIL. Let us start with the first question. Please focus with me. There is no right or wrong answer, just give your opinion.

Describe the design of the PharmD programme suitability for your needs, this question comes in 2 phases.

Describe the design of the PharmD programme suitability for your needs. For example is the time requirement appropriate, are regulatory policies that govern practical placement in the programme appropriate? What do you think about the PharmD programme suitability? Is it good? Does it meet your need?

S3, P4, FGs, 2015:

In terms of placement or in terms of what?

Researcher:

Like the time requirement appropriateness.

S3, P4, FGs, 2015:

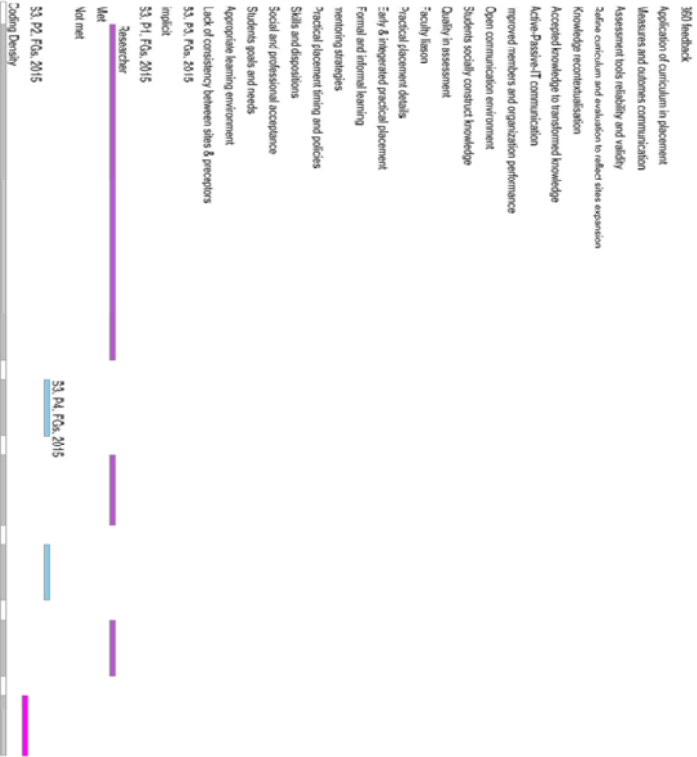
Like the number of hours we need to be in the rotation site?

Researcher:

As the whole programme suitability

S3, P2, FGs, 2015:

I would say for the whole programme, eight months is good. However,





So, it was not communicated to you?

S3, P4, FGs, 2015:

But if it was for the rotation, we set our own goals and objectives at the beginning of each rotation, and we show it to our preceptors.

Researcher:

It is individualized?

S3, P4, FGs, 2015:

We share it with preceptor and then we come to something common, like they try to accommodate our own objective according to what is available in their interest.

S3, P1, FGs, 2015:

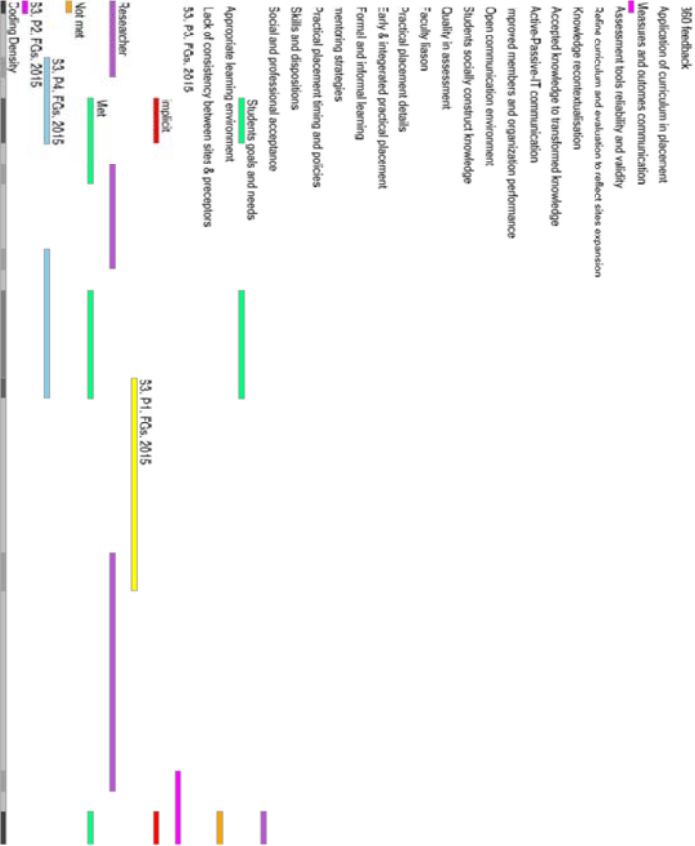
Or maybe what you mean about the theory, the evaluation itself?  
There are some components that we need to achieve at the end of rotation. May be this the way of communicating the theory of learning.  
The question is not very clear actually, vague!

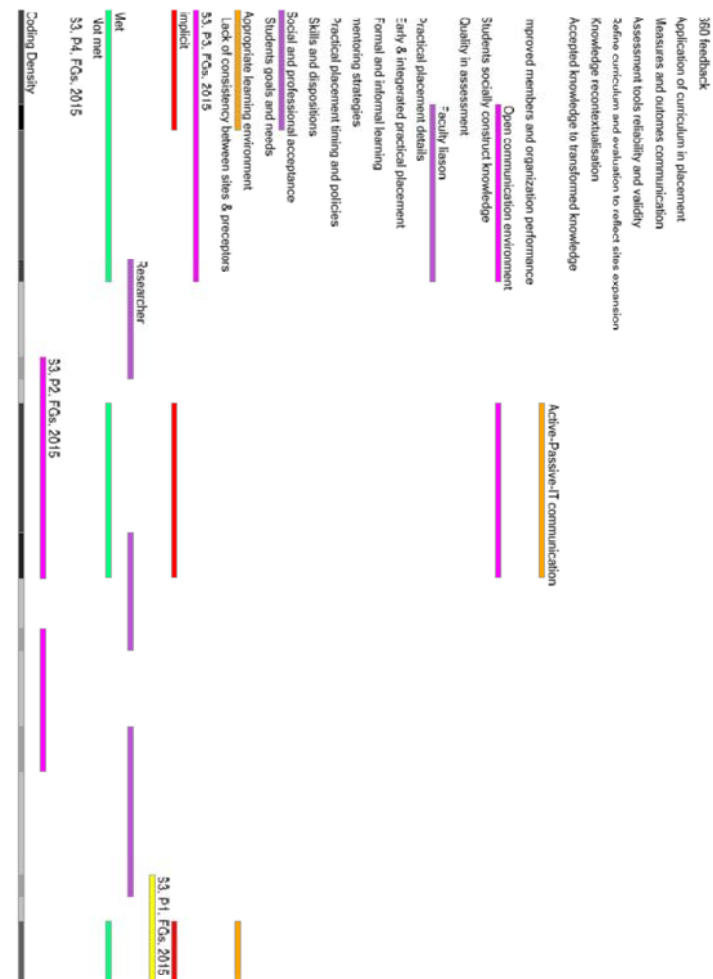
Researcher:

Maybe because you have not heard about it, it is like a theory about your learning, what you do everyday, the rotations, the curriculum and the evaluation.  
Ok let us go to the 3rd question. How do you describe the relationships and communication environment between participants in the PharmD programme, such as students, preceptors, faculty administration etc? Do you feel that you are a core part of this team?

S3, P3, FGs, 2015:

The first part of the question. In practice, everyone in the PharmD programme accept the students and welcome them. Not only the





11A

preceptors, who want to teach and educate them, even the people around, they are not responsible for the student, but they can help them in anything that they need.

In college, also here the faculty members, they all are looking for issues, if we have any problem, they always follow it with us. If we have any question, or any problem even in the practice, they are close and here, listening to our comments and our concerns and so on.

**Researcher:**

The relationship?

**S3, P2, FGs, 2015:**

It is a good relationship. In terms of faculty advisors, even preceptors, they are very supportive for us. The head of the programme is very supportive for us. Whenever we have a problem, we go back to her, she is very understanding.

**Researcher:**

So do you describe it as supportive relationship?

**S3, P2, FGs, 2015:**

Yes

**Researcher:**

What else, the communication environment? Is there motivation, trust and respect, is there an open dialogue?  
The overall impression about preceptors?

**S3, P1, FGs, 2015:**

We have good preceptors, we are learning a lot from them, they are very professional and respectful. In the college it self, the head of the programme, as my colleague mentioned is very supportive. Every



time we need her, we can email her, and she is available for us. Our advisor , if we approach them and if we have a concern, they will try to find a way to help us.

#### S3, P4, FGs, 2015:

I would add to the advisor part, so I think the experience with them is very individualized. Like my own personal experience with the advisor, I had one advisor, like throughout the year, so the first semester when I needed the adviser, most of the times, he was available all the way. Even without me talking to him, he would email me and check at the beginning of each rotation, in the middle of the rotation, he would send me something to read, like just for my interest, from time to time. So in the second semester, he was not that available, because he was busier because he was teaching, but I already knew my ways in the programme from my first semester experience. So this was fine. I think there is nothing to generalize about all advisors, it is very individualized experience. And the same for preceptors. Overall, I think it is positive supportive relation.

#### S3, P2, FGs, 2015:

They are all respectful, they respect us, and we respect them, so it is very good relation.

#### Researcher:

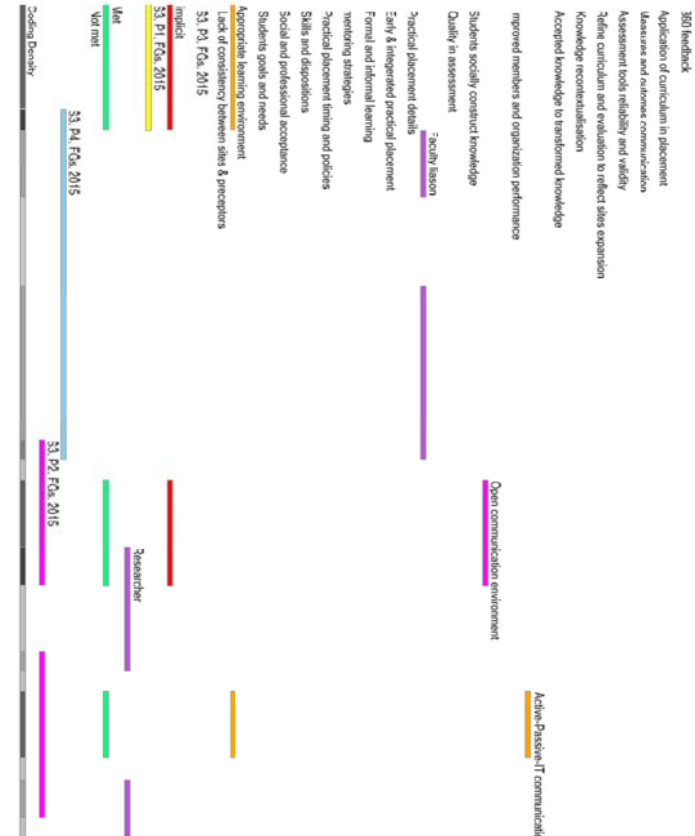
What about active /passive communication? open dialogue communication? Can you just tell them whatever you want?

#### S3, P2, FGs, 2015:

To some extent. I would say in the beginning we didn't expect this support, but after that, it was shown that you are welcome any time to tell us whatever concern you have.

#### Researcher:

What about Involvement? Do you feel that you are involved?





#### 4.3. Example of Excel sheet that contain categories of data analysis with quotes and with supervisors comments-Stage Four

Element	Respondent	Met	Example	Not Met	Example	Neither met or not met
Active-Passive-IT-Communication	Faculty FG	✓	<p>"I feel it is {communication} very open. The students feel that they can approach the preceptors and me as well as the preceptors can email me anytime and feel comfortable that I am going back to respond within a timely fashion"</p> <p>"The students know our office numbers they can come in, in person to meet when they are in campus, emails are available"</p>			
	Preceptors FG	✓	<p>In case we have some problems with students, it is taking care of promptly, I have the feeling that the communication also is proper in the way of evaluation, if there is anything improper. Who is going to be the liaison faculty for this rotation, whom to communicate with we know we have S3, P2, Interview, 2015 as centre of communication. I feel that communication is very proper in different levels"</p>			
	Preceptors FG			✓	<p>"They have to give us feedback, we are taking feedback from students, but we don't get feedback from college, they just send thank you letters and make a party, but we need real feedback" this is a good example</p> <p>"The contact between preceptors and academic staff, I think is the lowest"</p>	
	Students	✓	<p>"It is good relationship. In terms of faculty advisors, even preceptors, they are very supportive for us. The head of the programme, S3, P2, Interview, 2015, she is very supportive for us, whenever we have a problem, we go back to her, she is very understanding"again need to tie that support to the make you address the reciprocal learning and professional development.</p> <p>"To some extent, I would say in the beginning we didn't expect this support, but after that, it was shown that you are welcome any time to tell us whatever concern you have"</p>		<p>is there a student example that could be included - this could be key?These are the best examples I have</p>	
	Alumni			✓	<p>"Most of those who used to hide from liaison they don't have enough qualification to be PharmD preceptor. May be this explain why they used to have this behaviour"</p>	<p>"If I am a preceptor now, I feel it is a good chance to keep connection with college, and we provide them with feedback like you need to focus on"</p>

Code	Sub code	Respondent	Example
<b>Factors influenced the PharmD design</b>			
	<b>Hybrid design matching needs</b>	Designer 1	<p>" The elements of the programme are not exclusively Canadian, and this core group, I will say, were mapping and gathering information about programmes in North America but also else where in the world and anything in particular in the region, so Sara came with kind of some of the ground information from her experience, in the American or US model"</p> <p>" There is a need for the qualified Bsc, but recognizing as well one of the desires of the country is to build the human capacity and promote graduate programme opportunities, it would have been unfortunate if we wouldn't offer a post BSc programme for those who really wanted to pursue and to then make them competitive with the peers in the profession"</p>
		Designer 2	<p>" The goal was to form or design a hybrid programme to emulate condition in Canada as they currently were, conditions as they were changing towards, conditions in US and we also examined the Lebanese American university PharmD programme, which was the only internationally accredited programme at that time and tried to design something for Qatar that is hybrid of those 3 programmes"</p> <p>" The profession was generally not happy with conditions of practice many of these condition were opposed by country and by basically history with pharmacy doing distributional role with no opportunity for understanding of the fact that they could provide more services to the public than they are currently doing, and they professionally under recognized by public "</p> <p>" In recognition of the conditions of Qatar at the time of launch of programme, BSc and PharmD programmes, being the first in Qatar country, that really didn't have well developed pharmacy profession"</p>
<b>Refinement</b>	<b>Rapid pace</b>	Designer 2	<p>" It was a relatively rapid pace, we had deadlines, my goal was not to loose the pace that we are under to meet the deadline, and we know that if we met the deadline for the BSc and we are successful in BSc, then the president and anyone else who has a say would be more likely to give us what we need for the PharmD"</p> <p>" I would say that this was the right thing to do at that time, and I don't think that we would be entirely ready, but the timing is everything, and you know once the programme is in place that gave me the leverage to go after a pharmacy building, now we have the students, give us somewhere to put them, and we are over crowded in the area of the building that we are in now, and that timing was right"</p>
	<b>360 feedback</b>	Students	<p>" Even the patients sometimes"</p> <p>" In our culture the more significant is the family member, they contribute to the care, like give them this medication don't give them that medication, we tried that before, so they become as physicians, so we have to listen to their concerns as well"</p>

? Role of pharmacy in Qatar?

ditto

Relationship to BSc

## 5. Extract of research diary

This is an extract of my research diary that I started in August 2013. I used to record my thoughts, perceptions, and activities related to this research sometimes in daily basis, and sometimes every few weeks, as I felt appropriate.

Research Diary for the PhD research entitled as: Examining the implicit and explicit learning theory in QU PharmD programme-A case study.

January 8<sup>th</sup> 2015:

*I wanted to have a way to make the framework visual, and I discussed this visualisation idea with my supervisor and other scholars in the university of Bath. The idea of drawing a wheel to illustrate the elements of the framework came to my mind when I was discussing the behaviour wheels with a lecturer in Psychology. I liked the idea of illustrating the framework elements as wheel, where there is no formal start or end.*

*I tried several version of the wheel diagram and relationship between different wheels, i.e. different sections of the framework, with consultation with my three supervisors and two other professors in QU, till I reached with them the best shape for now.*

January 30<sup>th</sup>, 2015:

*Later on, I sent the framework chapter with its diagram to 6 healthcare education scholars who wrote previously about CoP and who knew that I am doing work in this direction. I gave them two weeks to give their feedbacks.*

*I got comprehensive feedback from some of them, like Dr X, and more abstracted feedback from others. They generally didn't think that I omitted an important element, and that the diagrams are good. They were generally thinking that this is a good step to develop the CoP and learning theory in pharmacy education, which is an under-researched and investigated area.*

*Dr X had some important suggestion to add, like definitions and clarifications. I did that. However, he suggested that I prioritise ideas, which made me to send him another comprehensive email seeking clarifications, and he did answer about the significance of this prioritisation (in his perspectives) and about making the framework as a step-by-step practical guide for implementation. To give his suggestions a chance, I took a round in prioritising elements under each section, which required me to rethink the literatures. I re-ordered my writing of the elements and the diagram to reflect the prioritisation and shared with my supervisors.*

*However, I was confused about the inclusion of lower priority and important elements in the framework, which is the outcome of the prioritisation suggestion. How can I justify the inclusion and consideration of elements that are of lower priority and importance? I discussed this concern with my supervisors and the feedback was that I could clarify in the introduction of the framework that elements are mentioned based on their priority, as perceived by the researcher.*

*Hence, the overall process and suggestions from Dr X helped me to arrange the elements of each section in order based on my reading and understanding of the CoP main concepts.*

*With regard to Dr X's other suggestion, my supervisors and I believed that the framework is not a step by step practical guide to implement CoP. Rather it is a theoretical conceptual framework, and I added this clarification to the chapter.*

February 20<sup>th</sup>, 2015:

*After I received all the feedbacks from all scholars which were generally positive, and after I discussed about my process of creating and validating the framework with some scholars and researchers other than my supervisors, I started to create the proposition of the framework (because I am adopting a case study methodology), which are going to be later used for creating the topic guides for focus groups and interviews. My plan was to have different or slightly different propositions or topic guide for different respondent category, because there are certain elements experienced by certain respondents and not other.*

*During the same time I was trying to search for an independent researcher while keeping in my mind a reasonable payment for her, in order to ensure the ability to accomplish the work in a good way. The first candidate was good, but requested a big number in terms of money. The second candidate was OK in skills with reasonable payment. I decided to do the alumni pilot interview and the preceptor FG in front of her before her FGs with students and faculty so that she observes me while I am facilitating the FG.*

March 15<sup>th</sup> 2015:

*I created the propositions for students, alumnus, faculty, preceptors, scholar, designers and the CCAPP administrator and for document analysis. The propositions were created as sentences to say that certain elements of the framework (selected according to the respondent category) were applied (so operationalising the elements in sentences). The propositions were reviewed and edited by my 3 supervisors. Consequently, I started to create the topic guide, where I combined several propositions that are related together in one question, because it was impossible to create an individual question for each proposition.*

March 26<sup>th</sup> 2015:

*The approval process in QU was not very easy this time, they required further review by the University of Bath, which required further readers to go through my proposals. It decided to hire independent researcher to conduct data collection for faculty and students in order to eliminate the potential of my power or conflict of interest. I finally received the ethical approval from QU in March 2015.*

April 17<sup>th</sup> 2015:

*The independent researcher did not come to the preceptors FG and apologised last minute. The last minute apology from the external researcher stressed me out in the day of preceptors FG. However, once I started the FG facilitation, I was enjoying this important step (data collection) for which I prepared the CoP framework for several months. I was happy that a representing preceptor from each practice site joined the*

*FG, in spite of that the number of attendees appears much smaller than the number of invitee. Overall, this was the best preceptors group in terms of attendance and representation of variable practice sites. The FG took a long time, more than I expected, which alerted me to double check my questions in other topic guides, my timing for them, and the allocated time for the FG.*

*I had to hire another one and guide her to the process and go with her through question by question in the topic guide and through the probes, also I gave her the recording of the preceptors FG so that she gets more oriented to facilitating FG.*

May 2<sup>nd</sup> 2015:

*When I first piloted the student topic guide with an alumnus, I explained a lot about the learning theories, learning in and from practice, and the CoP theory, which influenced her response to the first question about her knowledge of CoP. The external researcher will not be able to provide this amount of background, so I decided to reduce the amount of explanation I give about the theory in future sessions to ensure a more consistent data collection between myself and the external researcher.*

*So after the alumnus interview, I asked her to provide me with a constructive feedback about my questions. She did. Based on her feedback, I had a meeting with my supervisor to go through the questions together, rethink them and edit them.*

May 15<sup>th</sup> 2015:

*In April 2015, I attended the Nvivo training, and based on my attendance I took the following decisions:*

- I will use the Nvivo for data analysis*
- I will create codes for the propositions and use the collected data to see if codes are met or not. This will be done by double coding the sentences in the transcripts. One code will be about each element of the framework, represented as a proposition, and the other code will be as met or not met*

- I will make a test on that and see how much it provides me with good analysis by utilising the matrix query functionality in Nvivo.

June 17<sup>th</sup> 2015:

*By mid June, I finished all the data collection and transcription. I did the transcription myself. It was great opportunity for me to deeply understand what discussion took place in the FG and interviews, especially that students and faculty FGs were conducted by the external researcher. In fact, the faculty FG group, which was the first FG conducted by the external researcher, was challenging. In the beginning of the FG, the faculty were not very cooperative and were questioning the researcher questions. The researcher handled the situation very well, was very patient, repeated her questions, tried to provide explanations and examples, till she managed the FG well, and was able to facilitate a smooth and interesting FG. The faculty FG provided me with very good data.*

*The interview with the scholar was interesting; his responses were quite up to the point, explicit and short. I think that his knowledge about the CoP theory, and its significance led to these kinds of responses that are short, clear and explicit. Hence, the transcription of his interview was easier than others and enjoyable. This enjoyment might be attributed to my preference of his responses and discussion about learning theories and CoP because they match my line of thinking in this research.*

*The interview with the CCAPP administrator was surprising for me this time. I am not sure if this because of my enthusiasm towards learning theories and CoP or because of his real belief in that. My interview with him in stage 2 was disappointing compared to this one! He was more supportive for my ideas, which I did not expose explicitly. Overall, it was a very reasonable and successful interview.*

## 6. CoP framework (detailed)

